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1.0 Introduction

1.1 Purpose

The purpose of this document is to provide inspection participants with detailed instructions on how to perform Formal Inspections.

1.2 Document Organization and Content

This document is divided into three main sections:

Section 2.0 Instructions for the Roles of MODERATOR & LIBRARIAN

This section provides instructions on performing the duties of Moderator. It includes all the inspection duties which the Moderator is required to fulfill. The subset of the Moderator's duties which can be delegated to a Librarian are also specified in this section.

Section 3. 0 Instructions for the Roles of INSPECTOR, READER, & RECORDER

This section provides instructions on performing the duties of Inspector and incorporates instructions for performing the additional duties required of the Reader and Recorder.

Section 4. 0 Instructions for the Role of AUTHOR

This section provides instructions on performing the duties of Author. The Author is required to participate in all Formal Inspection stages except for the Preparation Stage. However, if the Author elects to participate in the Preparation Stage the Author must reference Section 3.3 (Preparation Stage) to find the appropriate instruction. In addition, this section points the Author to Section 3.4 (Inspection Meeting) to obtain the guidelines pertaining to the Inspection Meeting. All other duties required of the Author are outlined within this section.

The Appendices contain: a Quick Reference Guide for Formal Inspections, the Formal Inspection forms and instructions for the forms, checklists for various types of inspections, certification requirements for Formal Inspection participants, suggested

participants for various types of inspections, and guidelines for combining Formal Inspection roles. When the Formal Inspection forms, in Appendix B, are referenced in the text their titles are written in **BOLD TYPE AND ALL LETTERS ARE CAPITALIZED**. References to individual items on the forms are written in **Bold Type And The First Letter Of Each Word Is Capitalized**

2.0 Instructions for the Roles of MODERATOR & LIBRARIAN

This chapter contains instructions for fulfilling the roles of Moderator and Librarian. The Moderator must fulfill all the responsibilities of an Inspector plus additional responsibilities. This section covers both the Inspector specific and the Moderator specific responsibilities. The Librarian assists the Moderator but does not participate as an Inspector. A subset of the Moderator's duties can be delegated to the Librarian. The duties of the Moderator that can be delegated to the Librarian are written in *italics*. Any time expended by the Librarian should be recorded as part of the Moderator's time. In addition to the instructions provided in this section, it is suggested that Moderators attend bimonthly Moderator Meetings to obtain feedback and lessons learned from other Moderators in the organization.

2.1 Planning Stage

1 Ensure that entrance and exit criteria have been established for this type of work product.

2. Meet with the Author to discuss the product and determine if the Author feels the product is ready for inspection.

3. Determine if the size of the product is within the prescribed guidelines for the type of inspection. Refer to Appendix A, (Quick Reference Guide) for guidelines on the optimal number of pages or lines of code to inspect for each type of inspection. If the product exceeds the prescribed guidelines, break the product into parts and inspect each part separately.

4. Obtain from the Author a hard copy of the product and verify that the time, date, and version of each unit is recorded on the submitted product. Obtain a copy on electronic media, if available, and ensure that the time, date, and version information matches the information recorded on the hard copy. Instruct the Author that no modifications are to be made to the part of the product under inspection until after the Inspection Meeting.

5. Ensure that the appropriate entrance criteria have been fulfilled. (Examples:

does the product conform to project standards, has the document been run through a tool that checks spelling, has the code been successfully compiled without errors?). If the product does not meet the entrance criteria or if the Moderator does not feel that the product is ready for inspection, the Moderator should return the product to the Author for further development.

6. Obtain the following information from the Author and record it on the specified form. (A complete set of inspection forms are provided in Appendix B. In addition, a copy of the set of inspection forms can be obtained from the Data Manager.)

INSPECTION ANNOUNCEMENT form:

a) **Scheduled Delivery Date**,

b) **Size of the Work Product:** for documents, the number of pages, the spacing (single, double, diagram), and the font size; for code and pseudo-code, the number of lines and whether that includes comments and/or blank lines,

c) the percentage information for the **Nature of Work**,

d) a list of all **Reference Documents** that may be needed for the inspection.

INSPECTION SUMMARY REPORT form

a) **Approx. Person-Hours Expended (prior to inspection) Developing Work Product.**

7. Discuss candidates for Inspectors with the Author, select the Inspection Team members, and assign roles to the Inspectors. Suggestions are given in Appendix E, (Inspection Type and Participants).

8. Determine if an Overview Meeting is needed. An Overview should be scheduled if the Inspectors need background information to successfully fulfill their roles. This meeting occurs when the project is new, a novel technique is used in the work product, the Inspectors are new to the project, inspections are new to the project, or it is the first inspection on a particular type of work product (Examples: requirements, designs, code, etc.)

9. If an Overview Meeting is needed, work with the Author to set a tentative date for the meeting which will allow enough time for the Author to prepare. Refer to Appendix A for guidelines on the amount of lead time needed to prepare for the Overview.

10. With the Author's assistance, set a tentative date for the Inspection Meeting which will allow enough time for the Inspectors to prepare for the Inspection Meeting. Refer to Appendix A for guidelines on the amount of lead time needed to prepare for the Inspection Meeting. (Note: If a project inspection schedule has been established, set the Inspection Meeting date according to that schedule.)

11. Obtain from the Author copies of the Reference Documents needed for the inspection or obtain a list of relevant sections of the Reference Documents if the documents are already available to the inspection team members.

12. Obtain from the Author the time in person-hours expended during the Planning Stage and record it under **Planning** *on the* ***INSPECTION SUMMARY REPORT*** *form.*

13. Contact each candidate Inspector to determine the following:

a) *they are Certified Inspectors,*

b) *they will be able to attend the Overview if one is scheduled,*

c) *they will be able to attend the Inspection Meeting.*

Repeat this process with each Inspector until the entire Team, including the Author, is in agreement on the date and time of the Overview and the Inspection Meeting.

14. Reserve a conference room for the Overview Meeting, if one is scheduled, and for the Inspection Meeting. Be sure the room is equipped with the proper audiovisual or computer equipment if any is needed.

15. Contact the Data Manager to obtain a unique **Inspection ID**. *The* **Inspection ID** *must be recorded on all inspection forms. The Data Manager will assist in creating a meaningful* **Inspection ID**.

16. Fill in the **Planning Start Date** *and* **Project Start Date** *on the* **INSPECTION SUMMARY REPORT**.

17. Complete the **INSPECTION ANNOUNCEMENT** *form. Be sure to indicate, in the* **Comments** *section, the date and time the* **INDIVIDUAL PREPARATION LOG** *should be returned to the Moderator. This time should be at least 4 business hours before the scheduled Inspection Meeting time.*

18. Assemble the following items for the Inspection Package:

a) *the* **INSPECTION ANNOUNCEMENT** *form,*

b) *the blank* **INDIVIDUAL PREPARATION LOG** *form,*

c) *a blank* **INDIVIDUAL PREPARATION LOG** *continuation form,*

d) *the blank* **FORMAL INSPECTIONS LESSONS LEARNED** *form (Optional),*

e) *the* **INSPECTION SUMMARY REPORT** *from the first inspection if this is a re-inspection,*

f) *the product being inspected,*

g) *any reference material that the Author wishes to include in the package,*

h) *the appropriate Checklist for the type of inspection. Checklists are provided in Appendix C.*

Specify the location of any reference documents not included in the inspection package in the **Reference Documents** *section of the* **INSPECTION ANNOUNCEMENT**. Fill *in the* **Inspection ID #** on *all forms.*

19. Make a copy of the entire Inspection Package for each Inspector, including the Author.

20. Optional: The Moderator or an Inspector designated by the Moderator can complete the Preparation Stage prior to the copying and distribution of the Inspection Packages to the entire Team. This optional step is done to ensure that the product is ready for inspection. If the product is found to contain too many defects or potential Open Issues during the preparation stage, the product should be given back to the Author for further development work based on the information provided by the Moderator or the designated Inspector on the **INDIVIDUAL PREPARATION LOG.** This step will save considerable time since the rest of the Inspectors will not have to invest time on a product that is not ready for inspection. This step is highly recommended if the Author is new to the inspection process or inspections are new to a project. If this optional step is performed and it is determined that the product is not ready for inspection, the Data Collection Package should be completed. The package should include: the items listed in Step 24, the **INDIVIDUAL PREPARATION LOG** completed by the designated Inspector, and the **INSPECTION SUMMARY REPORT** completed by the Moderator. The **INSPECTION SUMMARY REPORT** should contain a Comment explaining the situation and state the number of additional hours the Author spent completing the product before it

was resubmitted for inspection. Submit this Data Collection Package to the Data Manager as soon as the development on the product is complete and it is ready to be submitted to the inspection process again, then start over at step 1 of this section.

21. *Fill in the* **Inspection ID #** on *each of the following forms and add them to the Moderator's Inspection Package:*

    a) *the blank* **DETAILED INSPECTION REPORT** *form,*

    b) *the* **INSPECTION SUMMARY REPORT** *form,*

22. Fill *in the* **Inspection ID #** on *each of the following forms and add them to the Recorder's Inspection Package:*

    a) *the blank* **INSPECTION DEFECT LIST** *form,*

    b) *a blank* **INSPECTION DEFECT LIST** *continuation form.*

If an overhead projector will be used to record the Defects, transparencies of these forms should be inserted into the Recorder's package instead of paper copies.

23. *Distribute the Inspection Package to each Inspector including the Author in a timely manner to allow enough time for preparation.*

24. *Begin assembling a Data Collection Package that will be sent to the Data Manager when the inspection process is complete. This package should start with the following items:*

    a) *the* **INSPECTION ANNOUNCEMENT** *form,*

    b) *the* **INSPECTION SUMMARY REPORT** *from the first inspection if this is a re-inspection,*

    c) *the product being inspected,*

    d) *any reference material that the Author wishes to include in the package,*

    e) *the Checklist for the inspection if it differs from those provided in Appendix C.*

More items will be added to this package as the inspection process continues.

25. Record the total time in person-hours expended by the Moderator during the

Planning Stage on the **INSPECTION SUMMARY REPORT** form. The total person-hours which the Librarian spent assisting the Moderator should be added to this total.

2.2 Overview Meeting

I Begin by introducing yourself and stating the purpose of the Overview. Be sure all key personnel are in attendance. Reschedule the Overview if they are not.

2. Introduce the Author and then turn the meeting over to the Author.

3. When the Author has completed the Overview presentation ask if there are any questions.

4. Thank the Author and remind everyone of the time and location of the Inspection Meeting. Also remind them when to turn in their **INDIVIDUAL PREPARATION LOG** forms.

5. Adjourn the meeting.

6. Record the time in person-hours expended by the Moderator, the Inspectors, and the Author during the Overview Stage on the **INSPECTION SUMMARY REPORT** form. Also, obtain from the Author the number of hours spent preparing for the Overview and record it on the same form.

2.3 Preparation Stage

1. Look through the Inspection Package to ensure that the following items are included:

    a) the **INSPECTION ANNOUNCEMENT** form,

    b) the blank **INDIVIDUAL PREPARATION LOG** form,

    c) a blank **INDIVIDUAL PREPARATION LOG** continuation form,

    d) the blank **FORMAL INSPECTIONS LESSONS LEARNED REPORT** form (Optional),

    e) the **INSPECTION SUMMARY REPORT** from the first inspection if this is a re-inspection,

h) the appropriate Checklist for the type of inspection,

i) the blank **DETAILED INSPECTION REPORT** form,

j) the **INSPECTION SUMMARY REPORT** form,

Obtain any items which are missing from the Inspection Package before continuing.

2. On the **INDIVIDUAL PREPARATION LOG** form, record the **Date Package Received** and the **Approx. # of Formal Inspections Participated in to Date.**

3. Look over the product being inspected for organization and understanding.

4. Review the Checklist provided with the Inspection Package.

5. Review the product using the Checklist as a guide to help identify possible Defects.

6. Refer to the documents listed under the **Reference Documents** section on the **INSPECTION ANNOUNCEMENT** for more information and to verify any specific references contained in the product.

7. If a portion of the product is unclear or appears to be incorrect, record a **Description** of the problem on the **INDIVIDUAL PREPARATION LOG.** Record the **Location** of the Defect/Concern and specify if it is a potential **Major Defect, Minor Defect** or **Open Issue** by checking the appropriate box. (Optional: Provide the **Suggested Classification** by: indicating **Missing, Wrong,** or **Extra;** indicating the **Type** of the Defect/Open Issue from the categories listed on the provided Checklist; and indicating in the **Origin** box the product in which the **Defect/Open Issue** probably originated, if other than the product being inspected.) If the same Defect appears in multiple locations, you may record the location in the **Location(s)** box and record the Defect number assigned to the first occurrence in the **Description** box to avoid having to rewrite the **Description** for each occurrence. Defects which are Trivial (not Major or Minor) such as typographical errors, punctuation, or improvements in verbiage should be marked on the document in red. Trivial Defects are recorded on the work product only, not on the **INDIVIDUAL PREPARATION LOG.** Trivial Defects that have been recorded on the work product are given to

the Author after the Inspection Meeting is complete.

8. Repeat steps 5-7 until the review of the product is complete and all concerns have been recorded.

9. Record the date and time in person-hours spent on this exercise on the **INDIVIDUAL PREPARATION LOG** form.

10. *Verify that all Inspectors have turned in their **INDIVIDUAL PREPARATION LOGS** by the time specified in the* **Comments** *section of the **INSPECTION ANNOUNCEMENT**. Contact any Inspectors who failed to turn in their **INDIVIDUAL PREPARATION LOG** forms on time. (Note: The Author is not required to complete an **INDIVIDUAL PREPARATION LOG**.)*

11. Review each **INDIVIDUAL PREPARATION LOG** to ensure that all Inspectors have checked one of the boxes to indicate whether they will be prepared for their roles. *Reschedule the Inspection Meeting* if the Moderator or any of the other Inspectors have indicated that they need more Preparation time.

12. Review the **Total Hours** expended by the Inspectors to determine if the Inspectors have spent enough time in preparation. Each Inspector should spend approximately the same amount of time in preparation as is expected to be spent during the Inspection Meeting. Contact any Inspectors who have spent significantly less time in preparation, and determine if there is sufficient reason for rescheduling the inspection.

13. Review the kinds of Defects logged to determine if the Inspectors are adequately prepared. A large deviation in the number of Defects found may be an indication that some of the Inspectors did not have adequate time to prepare. Contact any Inspectors who recorded a low number of Defects to determine if the Inspection Meeting needs to be rescheduled.

14. Use the **INDIVIDUAL PREPARATION LOGS** to efficiently organize the Inspection Meeting. The following is a list of possible scenarios:

    a) If the logs indicate that a particular section of the product contains numerous Defects, the Moderator may instruct the Reader to read rather than paraphrase that section of the product.

    b) If the Recorder's log indicates numerous Defects in a particular section of the product, the Moderator may appoint an alternate Recorder for that section. If another Inspector had fewer Defects identified for that particular section, then the Moderator could appoint that Inspector as the alternate Recorder. This would give the Recorder sufficient time during the meeting to explain the identified Defects without having to rush

through the recording process

c) The logs may indicate that additional reference materials need to be brought to the Inspection Meeting.

15. Review the list of Inspectors to determine the seating arrangement. The recommended seating arrangement is to have the Author beside the Moderator and to have the Reader and Recorder across the table from the Author.

16. Assemble all relevant Reference Documents to bring to the Inspection Meeting.

17. Record the date and time in person-hours expended during these additional preparation activities on your **INDIVIDUAL PREPARATION LOG** form. Record your **Completion Date** and calculate and record the **Total Hours** spent in the Preparation Stage. The total person-hours which the Librarian spent assisting the Moderator should be included in the **Total Hours.**

18. Review the following steps provided in Section 2.4 (Inspection Meeting) before the meeting starts.

2.4 Inspection Meeting

1. Arrive at least 10 minutes early to arrange the room and set up any equipment needed. Bring all reference materials, your Inspection Package, and the **INDIVIDUAL PREPARATION LOGS** from each Inspector to the meeting. Also bring your appointment book so you will know when you are available if Third-Hour Meetings are necessary as a result of this inspection.

2. Have a seating arrangement in mind and instruct the Inspectors where to sit as they arrive.

3. If an Overview was not held, begin the meeting by introducing yourself and state the name of the work product which is being inspected.

4. Introduce all the Inspectors and give their roles or allow them to give this information. Be sure all Inspectors are in attendance. Reschedule the Inspection Meeting if they are not.

5. Return each Inspector's **INDIVIDUAL PREPARATION LOG.**

6. Ask each Inspector to state the Total Hours spent in preparation which should be obtained from their **INDIVIDUAL PREPARATION LOG.** Calculate the

total number of person-hours spent by all the Inspectors and record it on the **INSPECTION SUMMARY REPORT** form in the **Preparation** boxes Record the preparation time for the Author and the Moderator separate from the other Inspectors.

7. Remind everyone of the following:

   a) the objective of the inspection is to find and classify Defects, not to propose solutions or grade the Author,

   b) give the Recorder enough time to write down each Defect/Open Issue before continuing with the inspection,

   c) discussion of the issue should not exceed 3 minutes,

   d) address the Reader or the Moderator when raising issues or asking questions about the product,

   e) be willing to accept the responsibility for resolving/closing any Open Issues which may be assigned to you.

8. Turn the floor over to the Reader to begin the presentation of the product being inspected.

9. As the Reader presents the product being inspected, refer to your **INDIVIDUAL PREPARATION LOG** to know when to raise issues you are concerned about. Stop the Reader and read aloud the Defect/Concern **Description** from your **INDIVIDUAL PREPARATION LOG.**

10. If, during the inspection, you discover a new Defect which you did not record on your **INDIVIDUAL PREPARATION LOG,** bring it to the attention of the rest of the Inspection Team.

11. If the Inspection Team agrees that a Defect has been identified, instruct the Recorder to write the **Location and Description** of the Defect on the **INSPECTION DEFECT LIST** form, and obtain agreement on the **Classification** of the Defect. Instruct the Recorder to indicate the product in which the Defect/Open Issue originated if the origin is other than the product being inspected. Be sure the initials of the finder are recorded in the **Finder's Initials** box on the **INSPECTION DEFECT LIST** in case the Author has questions about the Defect after the Inspection Meeting is over. If the Defect was initially found in the Inspection Meeting, place an asterisk by the finders initials to indicate that the defect was found during the meeting.

12. If the Inspection Team cannot reach an agreement as to whether or not a

particular portion of the product contains a Defect or what the Defect is within 3 minutes, instruct the Recorder to write the **Location and Description** of the issue and classify it as an **Open Issue** on the **INSPECTION DEFECT LIST** form. No further classification is needed at this time for the Open Issue. Determine which individuals are required to resolve the Open Issue, instruct the Recorder to write the initials of each of those individuals in the **Comments** box on the **INSPECTION DEFECT LIST** form, and instruct the Recorder to put an asterisk by the name of the Inspector responsible for resolution/closure of the Open Issue if other than the Author.

13. Instruct the Recorder to report aloud the number that was assigned to the Defect/Open Issue on the **INSPECTION DEFECT LIST**, and instruct the Inspectors to record that number on the **Number Assigned to Defect/Open Issue** space provided on the **INDIVIDUAL PREPARATION LOG** form. Recording the **Number Assigned to the Defect/Open Issue** on the **INDIVIDUAL PREPARATION LOG** is important for the following reasons:

    a) The same Defect may appear in multiple locations, however, the Inspectors should not be allowed to list all occurrences of the Defect at once. Each occurrence of the Defect should be identified when the Reader reaches the location of that occurrence and not before. This action prevents the Inspectors from skipping back and forth to different locations in the product which disrupts the flow of logic that the Reader is trying to maintain.

    b) When a Defect identical to one previously recorded is identified in another location, the Inspector identifying the Defect can refer the Recorder back to the specific **Number Assigned to Defect/Open Issue** where the Defect was previously recorded. The Recorder need only record the additional Defect location for the previously described Defect.

    c) At the end of the inspection when the Recorder reads back the Defects and Open Issues along with the respective Defect numbers, each Inspector can easily locate the corresponding Defect on the **INDIVIDUAL PREPARATION LOG** from the associated **Number Assigned to Defect/Open Issue**. Any issue recorded on the **INDIVIDUAL PREPARATION LOG** which was found not to be a Defect should have a checkmark for that **Number Assigned to Defect/Open Issue** to indicate that the issue was addressed but determined not to be a Defect/Open Issue.

14. If the Defect is in another document, assign an Inspector the responsibility of writing a Discrepancy Report/Change Request and instruct the Recorder to note the Inspector's initials in the **Comments** box on the **INSPECTION DEFECT LIST**.

15. Wait for the Recorder to finish recording the issue before instructing the Reader to continue with the presentation of the product being inspected. Do not allow the Inspectors to bring up new concerns while the Recorder is still writing.

16. Repeat steps 9-15 until the entire product is inspected or 2 hours have elapsed.

17. If the inspection is not completed in 2 hours, then agree on a date and time to hold a second Inspection Meeting. Complete the inspection process for the portion of the document which has been inspected by performing the remaining steps in this section.

18. At the end of the Inspection Meeting, instruct the Recorder to read each Defect number and the associated Defect **Description** from the **INSPECTION DEFECT LIST.** Also, instruct the Inspectors to verify that each concern they had on their **INDIVIDUAL PREPARATION LOG** was addressed and those determined to be Defects are included in the list of Defects read by the Recorder. Any issue which was not addressed in the meeting (does not have a number or checkmark on the **Number Assigned to Defect/Open Issue** line) should be raised while the Recorder is reading back the Defects. Optional: At this point, a closure date can be specified for the Open Issues and the date can be recorded in the **Comments** box. The date would reflect the date by which the Open Issue must be resolved, not the date by which it must be fixed.

19. Go around the table and ask each Inspector to comment on the inspection. Each Inspector should express an opinion on whether the product needs to be Re-inspected and encourage the Inspectors to provide positive comments about the product.

20. Based on the inputs from the other Inspectors, decide if the product needs to be re-inspected. If a large number of Major Defects were identified, or if a Major Defect is highly critical, or if there were a large number of Open Issues requiring rework, the product should be re-inspected. If a re-inspection criteria has been established for the project, compare the current inspection against the criteria to determine if a re-inspection is required.

21. The date and time for the Third-Hour Meeting(s) required to resolve Open Issues should be scheduled at this time. When a meeting is required to resolve an issue, *reserve a conference room* or specify an office where the meeting will take place. Specify which Inspectors are required at each Third-Hour meeting. This information is obtained from the **Comments** box on the **Inspection Defect List.** Inspectors need only attend the meetings to which they were assigned in order to make the most efficient use of their time. If the same Inspectors are required to resolve several Open Issues, consider grouping those Open Issues

into one Third-Hour Meeting. Remind those responsible for resolving/closing Open Issues that the resolution of each Open Issue must be relayed to the Moderator (the **OPEN ISSUE REPORT** form may be used to record the resolution), that they should obtain the description of the Open Issue from the **INSPECTION DEFECT LIST** before leaving the Inspection Meeting, and that all Open Issues need to be resolved by the assigned closure date. If a closure date was not assigned, the Open Issues must be closed prior to the Follow-Up Meeting. All time expended in resolving these issues must be reported to the Moderator by the Inspector responsible for closure. Encourage the Inspectors to help the Author resolve all Open Issues as soon as possible so that the Rework process is not delayed.

22. Collect all **INDIVIDUAL PREPARATION LOGS** and have all Inspectors turn in their copies of the product to the Author if they have redlined any Trivial Defects.

23. End the meeting on a positive note by commending the Author and the Inspectors.

24. Encourage the Inspectors to make use of the **FORMAL INSPECTIONS LESSONS LEARNED REPORT** form to inform the Data Manager of their comments, suggestions or criticisms on the Formal Inspection process.

25. Thank everyone for participating in the inspection and excuse everyone except the Author and the Recorder.

26. Ask the Author for the **Estimated Person-Hours for Rework** and the **Estimated Rework Completion Date.** The **Estimated Rework Completion Date** should be within the suggested guidelines provided in Appendix A so that subsequent development efforts are not delayed. Determine a tentative **Scheduled Follow-Up Date** and record all these dates on the **INSPECTION DEFECT LIST.**

27. Verify that all Defects recorded on the **DETAILED INSPECTION REPORT** have been classified and that the Author has been given a copy of the **INSPECTION DEFECT LIST.**

28. For each Defect recorded on the **INSPECTION DEFECT LIST,** have the Recorder read aloud what **Type** of Defect it is, whether it is **Major** or **Minor,** and whether it is **Missing, Wrong,** or **Extra.** This information is recorded on the **DETAILED INSPECTION REPORT** by placing a mark in the appropriate box as the Defect Classification is called out by the Recorder. When all Defects have been recorded on the **DETAILED INSPECTION REPORT,** total the columns both horizontally and vertically. Always use a pencil for filling out this form since it may be updated once all of the Open Issues have been

resolved.

29. Complete the items on the **INSPECTION SUMMARY REPORT** form labeled **Inspection Meeting Date, # Participants, Meeting Length, Defects Found, Open Issues,** and **Status.** Also, record the **Number of Representatives from Each Area,** including the Author's area of expertise. This may be a fractional number if one Inspector represents multiple areas. However, the total number of representatives should equal the number of inspection participants recorded under # **Participants.**

30. Record separately the time in person-hours expended by the Moderator, the Author, and the other Inspectors during the Inspection Meeting in the **Meeting** column on the **INSPECTION SUMMARY REPORT** form. Be sure to add the extra time expended by the Author, the Moderator, and the Recorder for completing the forms after the meeting. Use the following formulas to calculate **Meeting** time:

    Inspectors = **Meeting Length** x (**# Participants - #** Authors - 1 for the Moderator)

    Author(s) = (Meeting Length + Author's time spent on forms) x # Authors

    Moderator = Meeting Length + Moderator's time spent on forms + any time the Recorder spent helping the Moderator with the forms.

2.5 Third-Hour

1. Work to resolve any Open Issues to which the Moderator was assigned. Attend the Third-Hour meetings to which you were assigned.

2. The Moderator must ensure that each Inspector who was assigned the responsibility of closing an Open Issue performs the following: relays the resolution of the Open Issue to the Moderator so that it can be recorded on either the **Comments** box on the **INSPECTION DEFECT LIST** or on an **OPEN ISSUE REPORT** form if additional recording space is required; resolves the Open Issue by the closure date specified in the **Comments** box on the **INSPECTION DEFECT LIST,** or if a closure date was not assigned, resolves the issue prior to the Follow-Up Meeting; records the times expended by all Inspectors involved in resolving the Open Issues, and reports the times to the Moderator.

3. Complete any Discrepancy Reports/Change Requests assigned to you.

4. Ensure that the resolutions of all Open Issues to which the Author was not assigned are communicated to the Author.

5. During this stage, you may suggest solutions for correcting Defects if the Author requests your assistance.

6. If requested, assist the Author by providing clarification on Defects which you identified in the Inspection Meeting.

7. Work with the Author to obtain a Waiver from the Manager for any unaddressed Open Issue.

8. Work with the Author to obtain a Waiver from the Manager for any Major Defect which will not be corrected by the Follow-Up Meeting.

9. Contact the Author and ensure that the Rework will be complete by the **Estimated Rework Completion Date** recorded on the **INSPECTION DEFECT LIST.** If the Rework will not be complete, make the appropriate adjustments to the **Scheduled Follow-Up Date** which was recorded on the **INSPECTION DEFECT LIST.**

10. Prior to the **Scheduled Follow-Up Date,** check with the Author to schedule a time and location for the Follow-Up Meeting.

11. Record on the **INSPECTION SUMMARY REPORT** form, under the **Third-Hour** column, the time in person-hours expended by the **Moderator,** the **Inspectors,** and the **Author(s)** during the Third- Hour. This includes the time spent on resolving Open Issues, completing Discrepancy Reports/Change Requests/Waivers, and assisting the Author with Defect clarification or solutions. In addition, obtain all assigned Discrepancy Reports/Change Requests.

2.6 Rework Stage

Their are no duties for the role of Moderator during the Rework stage.

2.7 Follow-Up Meeting

1. Obtain a hard copy of the corrected work product from the Author. Verify that the time, date, and version of each unit is recorded on the submitted product.

Obtain a copy on electronic media, if available, and ensure that the time, date, and version information matches the information recorded on the hard copy. Instruct the Author that no further modifications are to be made to the part of the product which has been inspected without the proper approval

2. Verify that any new defects discovered during the Third-Hour or Rework stages are recorded on the **INSPECTION DEFECT LIST** and update the **DETAILED INSPECTION REPORT** accordingly.

3. Ensure that the reworked product meets the entrance criteria (standards, automatic checking, etc.) If it does not, return the product to the Author for further rework.

4. Obtain from the Author the completed **INSPECTION DEFECT LIST,** all **OPEN ISSUE REPORTS,** and a copy of any Waivers obtained.

5. Obtain from the Author and record on the **INSPECTION SUMMARY REPORT** the time in person-hours expended during the **Third-Hour** and **Rework.** In addition, record the **Actual Rework Completion Date** on the **INSPECTION DEFECT LIST.**

The Moderator or an Inspector designated by the Moderator performs steps 6-11. Assistance from the Author may be requested at the discretion of the Moderator or the Moderator's designee.

6. Review every item on the **INSPECTION DEFECT LIST**.

7. Verify that the **Location of Correction(s)** is recorded on the **INSPECTION DEFECT LIST.**

8. Verify that all Major Defects and Open Issues determined to be Major Defects have been corrected and no new Defects have been inserted.

9. Verify that all Minor Defects and Trivial Defects that were fixed were fixed correctly and that no new Defects were inserted in the process.

10. Check off each item on the **INSPECTION DEFECT LIST** to indicate that the Rework is complete.

Check off each Open Issue that has been resolved and verify that a description of the resolution is included in the **Comments** box on the **INSPECTION DEFECT LIST** or on the **OPEN ISSUE REPORT** if one was completed.

12. Update the columns and totals on the **DETAILED INSPECTION REPORT** and the **Defects Found** section of the **INSPECTION SUMMARY REPORT** if

any of the Open Issues were determined to be Defects.

13. Verify that each Open Issue has been addressed.

14. Verify that a waiver has been written for any Major Defect which has not been corrected.

15. Send the product back for additional Rework if any of the corrections are unacceptable, if any Open Issues have not been addressed, if waivers have not been obtained for the Major Defects that have not been corrected, or if the product fails to meet the exit criteria for this type of inspection.

16. Complete the **INSPECTION SUMMARY REPORT** form by completing the **Defects Reworked, Open Issues**, and **Discrepancy Reports/Change Requests/Waivers** sections. Record the time in person-hours expended by the Moderator and the Author during the Follow-Up Stage. **Total** all the hours expended in the inspection process. Record anything unusual about the inspection in the **Comments** section. Set a **Re-inspection Target Date** if a Re-inspection is required. (Optional: Provide comments which may be helpful in improving the Formal Inspection process on the **Formal Inspections Lessons Learned Report.)**

17. Add the following *items to the Inspection Package that is sent to the Data Manager:*

a) *each Inspector's original* **INDIVIDUAL PREPARATION LOG,**

b) *the* **INSPECTION DEFECT LIST,**

c) *the* **DETAILED INSPECTION REPORT,**

d) *the* **INSPECTION SUMMARY REPORT,**

e) *any completed* **OPEN ISSUE REPORT** *forms or Waivers,*

f) *J) a copy of the Inspection Certified work product.*

18. File the Data Collection Package with the Data Manager. Send a copy of the **INSPECTION SUMMARY REPORT** to *the project Quality Assurance Representative if one has been assigned.*

19. If the product is to be re-inspected, start with the Planning Stage and execute the Formal Inspection process again on the reworked product.

3.0 Instructions for the Roles of INSPECTOR, READER, & RECORDER

This chapter contains instructions for fulfilling the roles of Inspector, Reader, and Recorder. The *Reader* and *Recorder* must fulfill all the responsibilities of an Inspector plus additional responsibilities. These additional responsibilities are outlined for each of the different roles and are indicated in *italics.*

3.1 Planning Stage

There are no duties for the roles of Inspector, Reader, or Recorder during the Planning Stage.

3.2 Overview Meeting

1. I Arrive on time for the Overview Meeting. If you are unable to attend, notify the Moderator so that the Overview Meeting can be rescheduled.

2. Ask questions about any parts of the Overview presentation which are unclear. Before the meeting is concluded, you should obtain enough information about the product to fulfill your role as Inspector.

3.3 Preparation Stage

1. Look through the Inspection Package to ensure that the following items are included:

    a) the **INSPECTION ANNOUNCEMENT** form,

    b) the blank **INDIVIDUAL PREPARATION LOG** form,

    c) a blank **INDIVIDUAL PREPARATION LOG** continuation form,

d) the blank **FORMAL INSPECTIONS LESSONS LEARNED** form (Optional),

e) the **INSPECTION SUMMARY REPORT** from the first inspection if this is a re-inspection,

f) the product being inspected,

g) reference material which may have been submitted by the Author,

h) the appropriate Checklist for the type of inspection,

i) *Recorder: the blank **INSPECTION DEFECT LIST** form,*

j) *Recorder: a blank **INSPECTION DEFECT LIST** continuation form.*

Obtain any items which are missing from the Inspection Package before continuing.

2. On the **INDIVIDUAL PREPARATION LOG** form, record the **Date Package Received** and the **Approx. # of Formal Inspections Participated in to Date.**

3. Look over the product being inspected for organization and understanding.

4. Review the Checklist provided with the Inspection Package.

5. Review the product using the Checklist as a guide to help identify possible Defects.

6. Refer to the documents listed under the **Reference Documents** section on the **INSPECTION ANNOUNCEMENT** for more information and to verify any specific references contained in the product.

7. If a portion of the product is unclear or appears to be incorrect, record a **Description** of the problem on the **INDIVIDUAL PREPARATION LOG.** Record the **Location** of the Defect/Concern and specify if it is a potential **Major Defect, Minor Defect** or **Open Issue** by checking the appropriate box. (Optional: Provide the **Suggested Classification** by: indicating **Missing, Wrong,** or **Extra**; indicating the **Type** of the Defect/Open Issue from the categories listed on the provided Checklist; and indicating in the **Origin** box the product in which the Defect/Open Issue probably originated, if other than the product being inspected.) If the same Defect appears in multiple locations, you may record the location in the **Location(s)** box and record the Defect number

assigned to the first occurrence in the **Description** box to avoid having to rewrite the **Description** for each occurrence. Defects which are Trivial (not Major or Minor) such as typographical errors, punctuation, or improvements in verbiage should be marked on the document in red. Trivial Defects are recorded on the work product only, not on the **INDIVIDUAL PREPARATION LOG.** Trivial Defects that have been recorded on the work product are given to the Author after the Inspection Meeting is complete.

8. Repeat steps 5-7 until the review of the product is complete and all concerns have been recorded.

9. Record the date and time in person-hours spent on this exercise on the **INDIVIDUAL PREPARATION LOG** form.

10. *Reader: After completing the* **INDIVIDUAL PREPARATION LOG,** *review the product again to decide whether to paraphrase or to read the product verbatim. Usually, the only portions of the product which are read verbatim are those sections containing complicated logic which cannot be relayed adequately through paraphrasing.*

11. *Reader: Become familiar with the Reference Documents since they may be referred to during the presentation of the product at the Inspection Meeting.*

12. *Reader: Record on the* **INSPECTION PREPARATION LOG** *the date and time in person-hours expended on preparing for the Role of Reader.*

13. *Recorder: At this time you may wish to make a set of abbreviations for the type of classifications that are on the Checklist. This is done to speed the recording of the* **Type** *on the* **INSPECTION DEFECT LIST** *during the Inspection Meeting. (For example: Acc, Clar, Complet, Comply, Comput, etc., for the corresponding types Accuracy, Clarity, Completeness, Compliance, Computation.)*

14. If you are able to complete the Preparation by the time specified in the **Comments** section of the **INSPECTION ANNOUNCEMENT**, check the box on the **INDIVIDUAL PREPARATION LOG** form labeled **I am prepared for my role in the inspection.** Record your **Completion Date** and calculate and record the **Total Hours** spent in the Preparation Stage. Return the completed **INDIVIDUAL PREPARATION LOG** to the Moderator by the time specified on the **INSPECTION ANNOUNCEMENT.** The Moderator will return them to the Inspectors at the Inspection Meeting. If you are unable to complete the Preparation on time, check one of the boxes on the **INDIVIDUAL PREPARATION LOG** form labeled **Please reschedule this inspection because I need more preparation time,** or **Do not reschedule this inspection, I will be prepared in time for the inspection.** If either of these boxes is

checked, make a copy of the first page of the **INDIVIDUAL PREPARATION LOG** and return it to the Moderator by the time specified on the **INSPECTION ANNOUNCEMENT**.

15. Review the following steps provided in Section 3.4 (Inspection Meeting) before the meeting starts.

3.4 Inspection Meeting

1. Bring the Inspection Package to the meeting. Also bring your appointment book so you will know when you are available if Third-Hour Meetings are necessary as a result of this inspection. (Obtain your original **INDIVIDUAL PREPARATION LOG** from the Moderator.)

2. During the meeting remember the following:

   a) the objective of the inspection is to find and classify Defects, not to propose solutions or grade the Author,

   b) give the Recorder enough time to write down each Defect/Open Issue before continuing with the inspection,

   c) discussion of the issue should not exceed 3 minutes,

   d) address the Reader or the Moderator when raising issues or asking questions about the product,

   e) be willing to accept the responsibility for resolving/closing any Open Issues which may be assigned to you.

3. Reader: Begin the presentation of the product being inspected when instructed to do so by the Moderator. Guide the Team through the product. Present the product as you perceive it and note any parts difficult to understand. Be able to relate material back to higher level work products (requirements, designs, etc.) if necessary.

4. As the Reader presents the product being inspected, refer to your **INDIVIDUAL PREPARATION LOG** to know when to raise issues of concern. Stop the Reader and read aloud the Defect/Concem **Description** from your **INDIVIDUAL PREPARATION LOG.**

5. If, during the inspection, you discover a new Defect which you did not record

on your **INDIVIDUAL PREPARATION LOG,** bring it to the attention of the rest of the Inspection Team.

6. When another Inspector raises an issue, indicate your agreement or disagreement that the issue is a Defect.

7. On issues that are agreed to be Defects, provide input on the **Location and Classification** of the Defect to the Recorder.
Recorder: Record the **Location, Description** *and* **Classification** *of the Defect on the* **INSPECTION DEFECT LIST** *form. Indicate the product in which the Defect/Open Issue originated, if the origin is other than the product being inspected. Also record the initials of the finder in the* **Finder's Initials** *box in case the Author has questions about the Defect after the Inspection Meeting is over. If the Defect was initially found in the Inspection Meeting, place an asterisk by the finders initials to indicate that the defect was found during the meeting.*

8. Recorder: If the Defect is in another document, record the initials of the person assigned with writing a Discrepancy Report/Change Request in the **Comments** *box.*

9. If the Inspection Team cannot reach an agreement as to whether or not a particular portion of the product contains a Defect or what the Defect is within 3 minutes, an Open Issue will be recorded for that portion of the product.
Recorder: Record the **Location** *and* **Description** *of the issue and classify it as an* **Open Issue** *on the* **INSPECTION DEFECT LIST** *form. No further classification is needed at this time for the Open Issue. Record the initials of the person(s) assigned with resolving the issue in the* **Comments** *box. Place an asterisk by the name of the Inspector that the Moderator designates as responsible for closing the Open Issue if that Inspector is different from the Author. Record the initials of the person who raised the Open Issue in the* **Finder's Initials** *box.*

10. Recorder. Before allowing the inspection to continue, report aloud the **Number Assigned To Defect/Open Issue.** *Indicate to the Team when you have finished recording the issue so the Reader may continue with the presentation of the product being inspected.*

11. Record the number of the Defect/Open Issue in the **Number Assigned to Defect/Open Issue** space provided on the **INDIVIDUAL PREPARATION LOG.** If the concern which you had recorded on your **INDIVIDUAL PREPARATION LOG** was determined not to be a Defect/Open Issue, place a checkmark in the space provided for the **Number Assigned to Defect/Open Issue.** This is to indicate that your concern had been addressed but it was determined not to be a Defect/Open Issue.

12. *Reader: Once a Defect/Open Issue is identified, wait for the Recorder to finish writing down the required information on the* **INSPECTION DEFECT LIST** *and for the Inspectors to finish writing the* **Number Assigned to Defect/Open Issue** *before resuming the presentation of the product.*

13. The same Defect may appear in multiple locations, however, the Inspectors should not list all occurrences of the Defect at once. Each occurrence of the Defect should be identified when the Reader reaches the location of that occurrence and not before. This action prevents the Inspectors from skipping back and forth to different locations in the product which disrupts the flow of logic that the Reader is trying to maintain. In addition, when a Defect identical to one previously recorded is identified in another location, the Inspector identifying the Defect can refer the Recorder back to the specific **Number Assigned to Defect/Open Issue** where the Defect was previously recorded. The Recorder need only record the additional Defect location for the previously described Defect.
Recorder: Record all additional locations of a Defect on the **INSPECTION DEFECT LIST**.

14. Always wait for the Recorder to finish recording the Defect information before you identify another Defect.

15. Repeat steps 3-14 until the entire product is inspected or 2 hours have elapsed.

16. *Recorder: Once the entire product has been inspected and all Defects have been classified, read aloud each Defect/Open Issue* **Description** *on the* **INSPECTION DEFECT LIST**. *Make sure that you state the* **Number Assigned to Defect/Open Issue** *so that the other Inspectors can easily locate the corresponding information on their* **INDIVIDUAL PREPARATION LOG.**

17. Listen carefully as the Recorder reads the **Description** of each Defect/Open Issue and its associated number that has been recorded on the **INSPECTION DEFECT LIST**. Point out any discrepancies on the **INSPECTION DEFECT LIST**. Use the **Number Assigned to Defect/Open Issue** to help you locate the corresponding item on your **INDIVIDUAL PREPARATION LOG.** Verify that the Recorder recorded each Defect identified on your **INDIVIDUAL PREPARATION LOG** that was found to be a Defect. Verify that those items recorded on the ***INDIVIDUAL PREPARATION LOG*** which were found not to be Defects have been checked off to indicate that they were addressed during the meeting. Any issue which was not addressed in the meeting (does not have a number or checkmark on the Number Assigned to Defect/Open Issue line) should be raised while the Recorder is reading back the Defects.

18. At the end of the Inspection Meeting you will be asked to comment on the

inspection. You should express your opinion on whether the product needs to be Re-inspected and provide positive comments about the product.

19. The **Comments** box on the **INSPECTION DEFECT LIST** indicates which Inspectors are required to resolve Open Issues. Inspectors are only required to attend Third-Hour Meetings for issues to which they were assigned to make the most efficient use of their time. If you were assigned to an Open Issue which requires a Third-Hour Meeting to resolve, then indicate the dates and times when you will be available for a Third-Hour Meeting. If the same Inspectors are required to resolve several Open Issues, consider grouping those Open Issues into one Third-Hour Meeting. If you were assigned the responsibility for closing any Open Issues you must obtain the description of the Open Issue from the **INSPECTION DEFECT LIST** before leaving the Inspection Meeting.

20. Be sure all your issues have been addressed before leaving the meeting.

21. Turn in your **INDIVIDUAL PREPARATION LOG** to the Moderator and turn in your copy of the product to the Author if it contains redlines of Trivial Defects.

22. Optional: You are encouraged to make use of the **Formal Inspection Lessons Learned Report** to inform the Data Manager of your comments, suggestions, or criticisms on the Formal Inspection Process.

23. Recorder: Assist the Moderator in completing the **DETAILED INSPECTION REPORT.**

3.5 Third-Hour

1. Work to resolve any Open Issues to which you were assigned. Attend the Third-Hour meetings to which you were assigned. If no Open Issues were recorded during the Inspection Meeting, proceed to Section 3.6.

2. If you were assigned the responsibility of closing any Open Issues, you must ensure that: the resolution of each Open Issue is relayed to the Moderator (the **OPEN ISSUE REPORT** form may be used to record the resolution), each open Issue is resolved by the closure date specified in the **Comments** box on the **INSPECTION DEFECT LIST,** or if a closure date was not assigned, the issue is closed prior to the Follow-Up Meeting, the times expended by all Inspectors involved in resolving the Open Issues is recorded, and the times are reported to the Moderator.

3. Complete any Discrepancy Reports/Change Requests assigned to you and

provide the moderator with a copy.

4. Ensure that the resolutions of Open Issues to which the Author was not assigned are communicated to the Moderator and the Author.

5. During this stage, you may suggest solutions for correcting Defects if the Author requests your assistance.

6. If requested, assist the Author by providing clarification on Defects which you identified in the Inspection Meeting.

7. Report to the Moderator any time spent in steps 1 through 6.

3.6 Rework Stage

There are no duties for the roles of Inspector, Reader, or Recorder during the Rework Stage.

3.7 Follow-Up Meeting

There are no duties for the roles of Inspector, Reader, or Recorder during the Follow-Up Meeting.

4.0 Instructions for the Role of AUTHOR

This chapter contains instructions for fulfilling the role of Author. The Author is required to participate in all the Formal Inspection stages except for the Preparation Stage. Author(s) are not required to inspect their own work product, therefore they can elect not to perform the Preparation Stage.

4.1 Planning Stage

1 Make sure you have fulfilled all the entrance criteria before submitting the work product to the Moderator.

2. When the product is ready for inspection, schedule a meeting with the Moderator to discuss the product. If a product will not be ready by the date scheduled to begin the inspection process, notify the Moderator.

3. Inform the Moderator of the **Size of Work Product.** The Moderator will determine if the size of the product is within the prescribed guidelines for the type of inspection. Refer to Appendix A, (Quick Reference Guide) for guidelines on the optimal number of pages or lines of code to inspect for each type of inspection.

4. Provide to the Moderator a hard copy of the product and verify that the time, date, and version of each unit is recorded on the submitted product. Provide a copy on electronic media, if available, and ensure that the time, date, and version information matches the information recorded on the hard copy. Remember that no modifications are to be made without the proper approval to the part of the product submitted for inspection until after the Inspection Meeting is complete and the Rework Stage is started.

5. Demonstrate to the Moderator that the entrance criteria have been fulfilled. (Examples: the product conforms to project standards; the document has been run through a tool that checks spelling; the code has been successfully compiled without errors).

6. Give the Moderator the following information to be recorded on the specified form:

INSPECTION ANNOUNCEMENT form:

a) **Scheduled Delivery Date,**

b) **Size of the Work Product:** for documents, the number of pages, the spacing (single, double, diagram), and the font size; for code and pseudo-code, the number of lines and whether that number includes comments and/or blank lines,

c) the percentage information for the **Nature of Work,**

d) a list of all **Reference Documents** that may be needed for the inspection.

INSPECTION SUMMARY REPORT form:

a) **Approx. Person-Hours Expended (prior to inspection) Developing Work Product.**

7. Discuss candidates for Inspectors with the Moderator. Assist the Moderator in selecting the Inspection Team members and assigning roles to the Inspectors. Suggestions are given in Appendix E, (Inspection Type and Participants).

8. Assist the Moderator in determining if an Overview Meeting is needed. An Overview should be scheduled if the Inspectors need background information to successfully fulfill their roles. This situation occurs when the project is new, a novel technique is used in the work product, the Inspectors are new to the project, inspections are new to the project, or it is the first inspection of a particular type of work product (Examples: requirements, designs, code, etc.)

9. Provide the Moderator with a tentative date for the Overview which will allow enough time to prepare for the Overview. Refer to Appendix A for guidelines on the amount of lead time needed to prepare for the Overview.

10. Provide the Moderator with a tentative date for the Inspection Meeting which will allow enough time for the Inspectors to prepare for the inspection. Refer to Appendix A for guidelines on the amount of lead time needed to prepare for the Inspection Meeting.

11. Provide copies of the Reference Documents needed for the inspection or provide a list of relevant sections of the Reference Documents if the documents are already available to the inspection team members.

12. Provide the Moderator with the time in person-hours expended by you during

the Planning Stage.

4.2 Overview Meeting

1. Prepare the necessary materials for the Overview if one was scheduled. Notify the Moderator if more time is needed.

2. Arrive early for the meeting to set up any needed equipment.

3. Once the Moderator has introduced you, present the background information needed by the Inspectors.

4. Be prepared to answer any questions that may arise.

5. Provide the Moderator with the number of hours spent preparing for the Overview.

4.3 Preparation Stage

The Preparation Stage is optional for the Author(s). If the Author(s) choose to inspect their own product, they should follow the steps outlined in Section 3.3 (Preparation Stage).

4.4 Inspection Meeting

In addition to the steps contained in this section, the Author should follow the steps outlined in the Section 3.4 (Inspection Meeting). Those steps, as well as the steps contained in this section, should be reviewed before the Inspection Meeting begins.

1. Provide answers and clarification to questions that arise during the meeting.

2. Collect from the Inspectors all copies of the work product which contain redlines of Trivial Defects after the meeting is over.

3. Once the inspection is complete, provide the Moderator with the **Estimated Person-Hours for Rework, Estimated Rework Completion Date,** and a tentative **Scheduled Follow-Up Date.** The **Estimated Rework Completion Date** should be within the suggested guidelines provided in Appendix A so that subsequent development efforts are not delayed.

4. Make sure you obtain a copy of the **INSPECTION DEFECT LIST** before

leaving the meeting.

4.5 Third-Hour

1. Work to resolve any Open Issues to which the you were assigned. Attend the Third-Hour meetings to which you were assigned.

2. If you were assigned the responsibility of closing any Open Issues, you must ensure that: the resolution of each Open Issue is relayed to the Moderator (the **OPEN ISSUE REPORT** form may be used to record the resolution), each Open Issue is resolved by the closure date specified in the **Comments** box on the **INSPECTION DEFECT LIST,** or if a closure date was not assigned, the issue is closed prior to the Follow-Up Meeting, the times expended by all Inspectors involved in resolving the Open Issues is recorded, and the times are reported to the Moderator.

3. Complete any Discrepancy Reports/Change Requests assigned to you and provide the Moderator with a copy.

4. Obtain from the Moderator the resolution of any Open Issues to which you were not assigned.

5. During this stage, you may request assistance in correcting Defects.

6. If you require clarification on a Defect, request assistance from the Inspector whose initials appear in the **Finders Initials** box on the **INSPECTION DEFECT LIST**.

7. Work with the Moderator to obtain a Waiver from the Manager for any unaddressed Open Issue.

8. Work with the Moderator to obtain a Waiver from the Manager for any Major Defect which will not be corrected by the Follow-Up Meeting.

9. Track all time in person-hours expended during the Third-Hour activities so that it can be reported to the Moderator at the Follow-Up Meeting.

4.6 Rework Stage

1. Track all time in person-hours expended during the Rework stage so that it can be reported to the Moderator at the Follow-Up Meeting.

2. Correct all Major Defects and Open Issues determined to be Major Defects. Verify that no new Defects were inserted in the correction process.

3. Correct Minor Defects and Trivial Defects as cost and schedule allow. Verify that no new Defects were inserted in the correction process.

4. Indicate the **Location of Correction(s)** on the **INSPECTION DEFECT LIST** only if the location of the correction is different from the location of the Defect.

5. Communicate to the Moderator that the Rework will be complete by the **Estimated Rework Completion Date** recorded on the **INSPECTION DEFECT LIST.** If the Rework will not be complete by the **Scheduled FollowUp Date,** inform the Moderator.

6. Record any new defects discovered during the Third-Hour or Rework stages on the **INSPECTION DEFECT LIST**.

7. Ensure that the reworked product meets the entrance criteria (standards, automatic checking, etc.)

8. Prior to the **Scheduled Follow-Up Date** check with the Moderator to schedule a time and location for the Follow-Up Meeting.

4.7 Follow-Up Meeting

1. Provide the Moderator with a hard copy of the corrected work product and record the time, date, and version of each unit on the submitted work product. Provide a copy on electronic media, if available, and ensure that the time, date, and version information matches the information recorded on the hard copy.

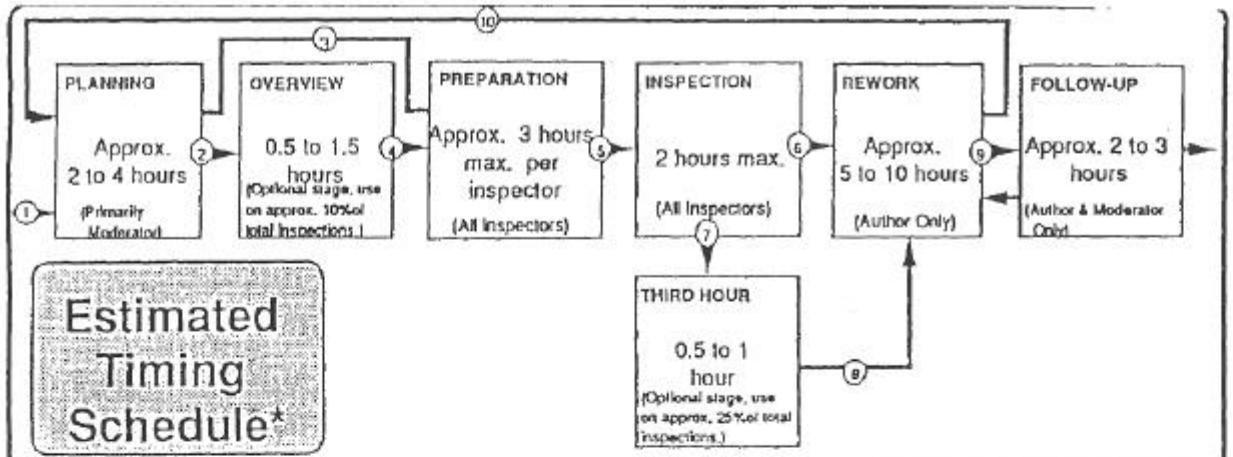
2. Verify to the Moderator that the reworked product meets the entrance criteria.

3. Give the Moderator the completed **INSPECTION DEFECT LIST,** all **OPEN ISSUE REPORTS,** and a copy of any Waivers obtained.

4. Provide the Moderator with the time in person-hours expended during the Third-Hour Meetings and the Rework Stage. Provide the Moderator with the **Actual Rework Completion Date.**

5. If requested, provide the Moderator with assistance in the process of verifying the corrections.

Appendix A: Quick Reference Guide



Estimated Timing Schedule*

TRANSITION TIMES**

1. 1 day minimum
2. 5 day minimum, when included
3. 4 day minimum for inspectors to fit preparation time into normal work schedule
4. 4 day minimum for inspectors to fit preparation time into normal work schedule
5. 4 hour minimum
6. Immediate
7. 1 day recommended
8. minimum possible time
9. 1 week maximum from end of Inspection Meeting
10. 2 week maximum

SYMBOLS

- PROCESS STAGE
- TIME REFERENCE
- STAGE TRANSITION

* *Historically, complete inspections at JPL have averaged 28 total staff hours for 5 person teams.*

** *Entire inspection process should be completed from start to finish within a 2 week period.*

JPL

Formal Inspections for Software Development

QUICK REFERENCE

SOFTWARE PRODUCT ASSURANCE

Types of Inspections

- R0 Functional Design Inspection
- R1 Software Requirements Inspection
- I0 Architectural Design Inspection
- I1 Detailed Design Inspection
- I2 Source Code Inspection
- IT1 Test Plan Inspection
- IT2 Test Procedures & Functions Inspection

Guidelines for Successful Inspections

1. Train moderators, inspectors & managers
2. No more than 25% of developers' time should be devoted to inspections
3. Inspect 100% of the work product
4. Be prepared
5. Be willing to associate and communicate
6. Do not use derogatory language
7. Have at least one positive comment
8. Find defects; not solutions
9. Avoid discussions of style
10. Stick to the standard or change it
11. Be technically competent
12. Record all issues in public
13. Stick to technical issues
14. Evaluate the product, not the author
15. Distribute inspection documents as soon as possible.
16. Let the author determine when the work product is ready for inspection
17. Keep accurate statistics

Meeting* Rate Guidelines for Various Types of Inspections

Stage	Inspection Meeting
R0	Target - 20 pages, Range 15 - 25 Pages
R1	Target - 20 pages, Range 15 - 25 Pages
I0	Target - 28 Pages, Range 21 - 35 Pages
I1	Target - 35 Pages, Range 26 - 44 Pages
I2	500 Lines of Source Code**
IT1	Target - 33 Pages, Range 25 - 41 Pages
IT2	Target - 37 Pages, Range 27 - 47 Pages

* Assuming a 2 hour meeting. Scale down planned meeting duration for shorter work products.

** Flight Software and other highly complex code segments should proceed at about half this rate.

Roles of Participants

Moderator

Responsible for obtaining a good inspection and collecting inspection data. Plays key role in all stages of process except rework. Required to perform special duties of an inspection in addition to specific tasks.

Author

Provides information about the work product during all stages except rework. Responsible for correcting all major errors and any minor errors which cost and schedule permit.

Reader

Guides team through the work product during meeting. Reads or paraphrases work product in detail. Should be an inspector representing the same (or next) life cycle phase as the author and is familiar with the work product. Performs duties of a regular inspector in addition to special tasks.

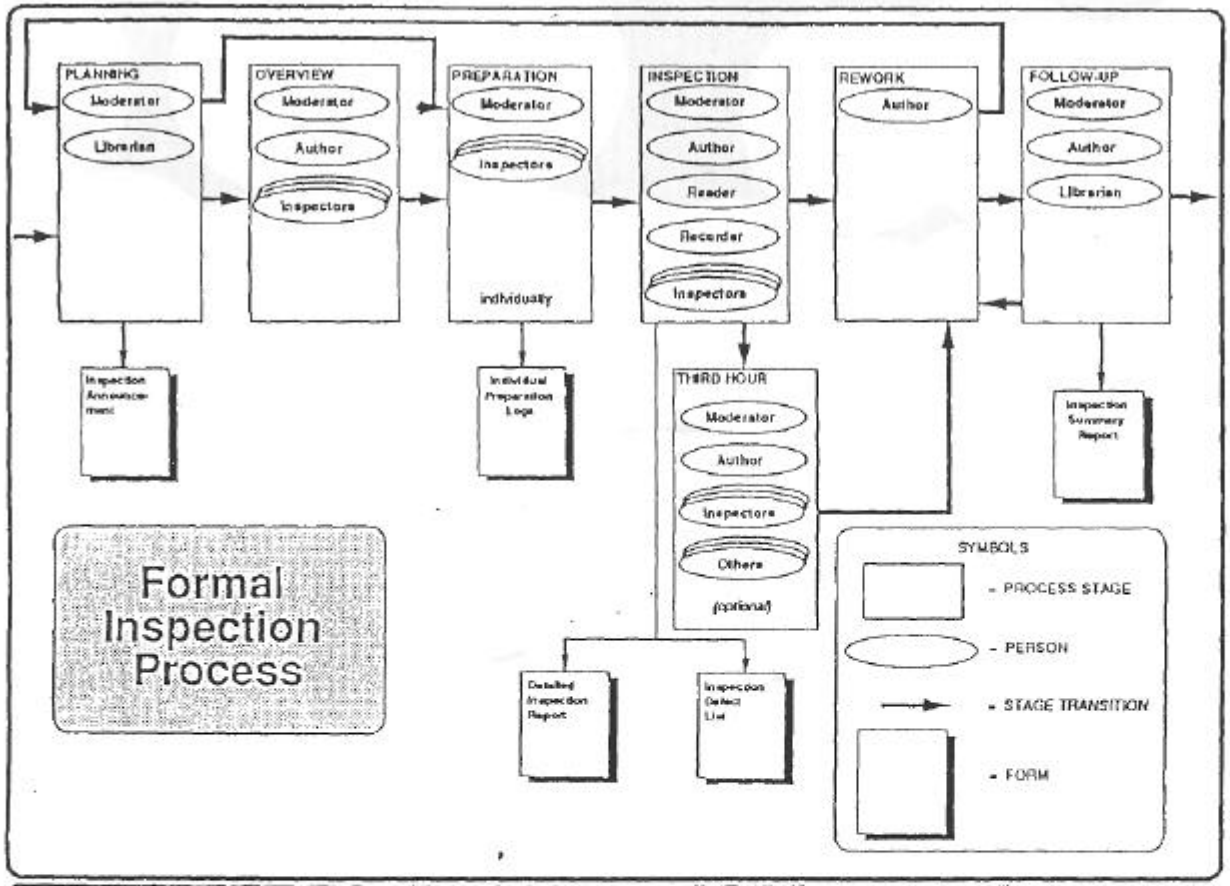
Recorder

Responsible for accurately recording each defect found during the meeting on the *Inspection Defect List*. Required to duties of a regular inspector in addition to special tasks.

Inspectors

Responsible for finding defects in the work product from a general point of view, as well as errors which only affect their area of the project.

JCKA.LG : 5/16/91



General Rules for Formal Inspections:

- Management should not be present -- FI is not a tool for worker evaluation
- Training: All Moderators & Inspectors trained in 1 & 1/2 day FI course (moderators receive additional in service training). All Managers trained in 2 hr. FI course.
- Inspection carried out according to course; a phase may be omitted only if labeled "optional"
- Used to evaluate only technical development documents, design, code and testing materials
- Inspection meetings should not exceed 2 hours
- Do not require more than two inspections per day for participants
- Developers will spend no more than 25% of their time in inspection related duties.
- Author may not be moderator, reader or recorder of their own work
- Checklists for each inspection type will be used to define task and stimulate defect finding.
- Work products will be inspected at rates to maximize error detection.
- Statistics on defects (#, severity and type), work hours expended for inspections and size of work products will be maintained.

Classification of Defects:

Severity

Major:
- An error which would cause a malfunction or prevents attainment of an expected or specified result
- Any defect which would result in a discrepancy report, failure report, or change request if allowed to propagate to the next life cycle phase

Minor:
- Any other defect
- The author is required to correct all major defects but should choose the subset of minor defects to correct, as time always permit.

Category

- Missing
- Wrong
- Extra

Type

The types of defects are derived from headings on the appropriate checklist. The defect types are now standardized across inspections from all phases of the lifecycle. The types of defects are the following:

- Clarity
- Completeness
- Compliance
- Consistency
- Correctness / Logic
- Data Usage
- Functionality
- Interface
- Level of Detail
- Maintainability
- Performance
- Reliability
- Testability
- Traceability
- Other

EXAMPLE

The following is an example of a defect classification which would be recorded on the *Inspection Defect List*:

Description	Classification
Line 169 -- While counting the number of leading spaces in variable NAME, the wrong "I" is used to calculate "J".	Major Defect [X] Missing [ ] Minor Defect [ ] Wrong [X] Questions [ ] Extra [ ] Type: Correctness / Logic

ACTIVITIES BY INSPECTION STAGE:

Planning:

1. Determine meeting of entry criteria
2. Determine need for overview
3. Select inspection team and assign roles
4. Calculate time required using rate history
5. Schedule Overview (if needed)
6. Schedule Inspection meeting time & place
7. Distribute inspection package
8. Time data recorded

Overview:

1. Moderator conducts meeting
2. Author presents background information (For one or more Inspections)
3. Roles are assigned to inspectors (Roles assigned in Planning if this stage omitted)
4. Time data recorded.

Preparation:

1. Examine materials for understanding
2. Examine materials for possible defects
3. Complete preparation log form
4. Prepare for assigned role
5. Moderator reviews preparation among inspectors and makes "Go/No Go" decision on inspection meeting.

Inspection Meeting:

1. Moderator introduces people and identifies their roles in the inspection.
2. Reader presents the work product to the inspection team in a logical and orderly manner.
3. Find defects.
4. Record and classify defects.
5. Action items assigned to inspectors if unresolvable discrepancies occur.
6. Summarize errors and classification
7. Determine need for re-inspection or 3rd Hour
8. Estimate rework time (from author). Do same for action items if appropriate.
9. Assign writing of change request and/or discrepancies report (if needed)

Rework:

1. All major defects noted in the "Inspection Defect List" are resolved by the Author.
2. Minor defects (which would not result in faulty execution) are resolved at the discretion of the Author.

Follow-Up:

1. Moderator and Author meet to perform steps 2-3 below.
2. Moderator verifies that all major defects have been corrected and no secondary defects have been introduced.
3. Moderator insures that every discrepancy is entirely resolved at this level.
4. Moderator verifies that all exit criteria for the given type of inspection is met
5. Inspection package is filed.
6. Inspection summary information disributed to proper personnel and stored for future reports

Appendix B: Forms with Instructions

B.1 Required Forms

The forms contained in this section are required to be completed during the Formal Inspection process.

[1] Inspection ID # _____

INSPECTION ANNOUNCEMENT

[2] Overview Meeting	[3] Inspection Meeting
Date: _____	Date: _____
Time: _____	Time: _____
Place: _____	Place: _____

[4] Distribution Date: _____

[5] Project: _____

[6] Subsystem: _____

[7] Unit(s) or Section(s) / Version: _____

_____

[8] Scheduled Delivery Date*: _____

[9] Change Authorization(s): _____

_____

[10] Is this a Re-inspection? ☐ No

☐ Yes, Reason: _____

[11] Distribution:

Inspector's Name	Mail Stop/Phone	Role	Area of Expertise
_____	_____	Moderator	_____
_____	_____	Recorder	_____
_____	_____	Reader	_____
_____	_____	Inspector	_____
_____	_____	Inspector	_____
_____	_____	Inspector	_____
_____	_____	Inspector	_____
_____	_____	Inspector	_____
_____	_____	Inspector	_____

[12] Inspection Type:

- ☐ SY: System Requirements
- ☐ SU: Subsystem Requirements
- ☐ R0: Functional Design
- ☐ R1: Software Requirements
- ☐ I0: Architectural/Preliminary Design
- ☐ I1: Detailed Design
- ☐ I2: Source Code
- ☐ IT1: Test Plan
- ☐ IT2: Test Procedures and Functions
- ☐ Other: _____

[13] Size of Work Product*: _____

[14] Nature of Work*: New: ____% Modified: ____% Reused: ____% Deleted: ____%

[15] Reference Documents*: _____

_____

_____

_____

[16] Comments: _____

_____

_____

_____

_____

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(This form is completed by the Moderator, except for: *Moderator and Author.)

INSTRUCTIONS FOR THE INSPECTION ANNOUNCEMENT FORM

1 Unique Inspection ID assigned by the Data Manager during the Planning Stage prior to distributing the Inspection Packages.

2 Date, time, and place of the Overview Meeting if one is scheduled.

3 Date, time, and place of the Inspection Meeting

4 Date that the Inspection Package is distributed to each Inspector.

5 Title or acronym of the project for which the product is being produced.

6 Title or acronym of the subsystem for which the product is being produced.

7 Name(s) or acronym(s) and version number(s) of the unit(s) or section(s) of a document being inspected. Both a hard and soft copy should be submitted for inspection **and both should have the same version number.**

8 Delivery date of the product being inspected according to the schedule.

9 If applicable, list the name(s) of the person(s) who can authorize changes on the product being inspected.

10 Check the appropriate box to indicate whether this is a re-inspection. If "Yes", indicate the reason for the re-inspection in the space provided. (For example, a large number of Major Defects, a large number of Open Issues, portions of the product contained To Be Determined (TBD) sections during the first inspection.)

11 Indicate the name, mail stop, and phone number of all Inspectors according to their role in the Inspection Meeting. List the Author as an Inspector. Also indicate the Area(s) of Expertise each Inspector represents from the following categories:

Project Engineering	Testing
System Engineering	Quality Assurance
H/W Development	Operations
S/W Development	Science Team
User/Customer	Other

12 Check the appropriate box or record the Inspection Type in the space provided.

13 Size of the work product being inspected using one of the following methods:

Pages (PG) - indicate whether double-spaced, single-spaced, or drawings; also font size if known;
Pseudo Lines of Code (PLOC) - indicate whether this number includes comment lines and/or blank lines;
Source Lines of Code (SLOC) - indicate whether this number includes comment lines and/or blank lines.

14 Indicate what percent of the product being inspected is New, Modified, Reused, and Deleted. Should total to 100 percent.

15 List all Reference Documents either included in the Inspection Package or available for more information on the product being inspected. Indicate where these documents can be found.

16 Include any additional comments that may be helpful to the Inspectors. (For example, indicate the date and time that the INDIVIDUAL PREPARATION LOG form should be returned to the Moderator.

[13] Page 1 of ____ [1] Inspection ID # _____

INDIVIDUAL PREPARATION LOG

[2] Inspector's Name: _____ [4] Date Package Received: _____

[3] Approx. # of Inspections Participated in to Date: _____ [5] Completion Date: _____

[6] Preparation Log:

Date	Time Expended

Total Hours: _____

DEFECTS/CONCERNS

[7] #	[8] Location(s)	[9] Description	[10] Suggested Classification
1			Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ____ Origin ____
	[12] Number Assigned to Defect / Open Issue: ____		
2			Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ____ Origin ____
	[12] Number Assigned to Defect / Open Issue: ____		
3			Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ____ Origin ____
	[12] Number Assigned to Defect / Open Issue: ____		
4			Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ____ Origin ____
	[12] Number Assigned to Defect / Open Issue: ____		

[11] The Moderator needs to receive a copy of this form at least 4 hours before the scheduled Inspection Meeting. Please return in a timely manner with the appropriate box checked below.

☐ I am prepared for my role in the inspection.

☐ Please reschedule this inspection because I need more preparation time.

☐ Do not reschedule this inspection, I will be prepared in time for the inspection.

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(This form is completed by each Inspector.)

INSTRUCTIONS FOR THE INDIVIDUAL PREPARATION LOG FORM

1 Unique Inspection ID assigned by the Data Manager during the Planning Stage prior to distributing the Inspection Packages.

2 Name of the Inspector.

3 Approximate number of Formal Inspections that the Inspector has participated in prior to this inspection.

4 Date that the Inspector received the Inspection Package.

5 Date that the Inspector completes the INDIVIDUAL PREPARATION LOG form.

6 Date and time expended in "X.X" person-hours each time the Inspector reviews the product or a reference document. Once completed, indicate the total hours expended in the Preparation Stage for this inspection. (Note: "X.X" refers to the fractional number that specifies the hours and minutes which were expended in this activity.)

7 Number of the Defect/Concern in sequential order.

8 Location of the Defect/Concern in the product.

9 Brief description of the Defect/Concern.

10 Give suggestions for the classification of the Defect/Concern. Classify it as either a potential Major Defect, Minor Defect, or Open Issue. Optional: classify it as Missing, Wrong, or Extra; indicate the type of the Defect/Open Issue from the categories listed on the provided Checklist; and indicate the product in which the Defect/Open Issue probably originated if other than the product being inspected.

11 Return a copy of this form to the Moderator at least 4 hours prior to the Inspection Meeting or by the time indicated by the Moderator on the INSPECTION ANNOUNCEMENT form. Check one of the three boxes provided.

12 During the Inspection Meeting, if a Defect/Concern on this form is determined to be a Defect/Open Issue, specify the number which the recorder assigns to that particular Defect/Open Issue.

13 Record the page number of this page and the total number of INDIVIDUAL PREPARATION LOG form pages.

[13] Page ____ of ____ [1] Inspection ID # ______________________________

INDIVIDUAL PREPARATION LOG (cont'd)

DEFECTS/CONCERNS

[7] # [8] Location(s) [9] Description [10] Suggested Classification

Major Defect ☐ Missing ☐
Minor Defect ☐ Wrong ☐
Open Issue ☐ Extra ☐
Type ☐ Origin ☐

[12] Number Assigned to Defect / Open Issue: ____

Major Defect ☐ Missing ☐
Minor Defect ☐ Wrong ☐
Open Issue ☐ Extra ☐
Type ☐ Origin ☐

[12] Number Assigned to Defect / Open Issue: ____

Major Defect ☐ Missing ☐
Minor Defect ☐ Wrong ☐
Open Issue ☐ Extra ☐
Type ☐ Origin ☐

[12] Number Assigned to Defect / Open Issue: ____

Major Defect ☐ Missing ☐
Minor Defect ☐ Wrong ☐
Open Issue ☐ Extra ☐
Type ☐ Origin ☐

[12] Number Assigned to Defect / Open Issue: ____

Major Defect ☐ Missing ☐
Minor Defect ☐ Wrong ☐
Open Issue ☐ Extra ☐
Type ☐ Origin ☐

[12] Number Assigned to Defect / Open Issue: ____

Major Defect ☐ Missing ☐
Minor Defect ☐ Wrong ☐
Open Issue ☐ Extra ☐
Type ☐ Origin ☐

[12] Number Assigned to Defect / Open Issue: ____

Major Defect ☐ Missing ☐
Minor Defect ☐ Wrong ☐
Open Issue ☐ Extra ☐
Type ☐ Origin ☐

[12] Number Assigned to Defect / Open Issue: ____

INSTRUCTIONS FOR THE INDIVIDUAL PREPARATION LOG FORM

1 Unique Inspection ID assigned by the Data Manager during the Planning Stage prior to distributing the Inspection Packages.

2 Name of the Inspector.

3 Approximate number of Formal Inspections that the Inspector has participated in prior to this inspection.

4 Date that the Inspector received the Inspection Package.

5 Date that the Inspector completes the INDIVIDUAL PREPARATION LOG form.

6 Date and time expended in "X.X" person-hours each time the Inspector reviews the product or a reference document. Once completed, indicate the total hours expended in the Preparation Stage for this inspection. (Note: "X.X" refers to the fractional number that specifies the hours and minutes which were expended in this activity.)

7 Number of the Defect/Concern in sequential order.

8 Location of the Defect/Concern in the product.

9 Brief description of the Defect/Concern.

10 Give suggestions for the classification of the Defect/Concern. Classify it as either a potential Major Defect, Minor Defect, or Open Issue. Optional: classify it as Missing, Wrong, or Extra; indicate the type of the Defect/Open Issue from the categories listed on the provided Checklist; and indicate the product in which the Defect/Open Issue probably originated if other than the product being inspected.

11 Return a copy of this form to the Moderator at least 4 hours prior to the Inspection Meeting or by the time indicated by the Moderator on the INSPECTION ANNOUNCEMENT form. Check one of the three boxes provided.

12 During the Inspection Meeting, if a Defect/Concern on this form is determined to be a Defect/Open Issue, specify the number which the recorder assigns to that particular Defect/Open Issue.

13 Record the page number of this page and the total number of INDIVIDUAL PREPARATION LOG form pages.

[12] Page 1 of ____ [1] Inspection ID # _____

INSPECTION DEFECT LIST

[2] Estimated Person-Hours for Rework*: _____ [4] Scheduled Follow-Up Date*: _____

[3] Estimated Rework Completion Date*: _____ [5] Actual Rework Completion Date*: _____

[6] #	[7] Location(s)	[8] Description	[9] Finder's Initials	[10] Classification	[11] Comments	[13] Location of Correction(s) ***	[14] Corrected**
①				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ☐ Origin ☐			☐
②				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ☐ Origin ☐			☐
③				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ☐ Origin ☐			☐
④				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ☐ Origin ☐			☐
⑤				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type ☐ Origin ☐			☐

(This form is completed by the Recorder, except for: *Moderator and Author
**Moderator only
***Author only)

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INSTRUCTIONS FOR THE INSPECTION DEFECT LIST FORM

1 Unique Inspection ID assigned by the Data Manager during the Planning Stage prior to distributing the Inspection Packages.

After the Inspection Meeting -

2 The Author(s) reports to the Moderator the total time in "X.X" person-hours estimated for Rework.

3 The Author(s) reports to the Moderator the estimated Rework completion date.

4 Date scheduled between the Author(s) and the Moderator for the Follow-Up Meeting to review the corrections made to the product by the Author(s) during the Rework Stage.

After completion of the Rework -

5 Date the Rework is completed by the Author(s). The completion date is revised if the Moderator returns the product to the Author(s) for further Rework.

During the Inspection Meeting. For each Defect/0pen Issue identified -

6 Number of the Defect/Open Issue in sequential order.
7 Location of the Defect/Open Issue in the product.
8 Concise description of the Defect/Open Issue.
9 Initials of the Inspector who raised the Defect/Open Issue in the meeting. If the error was initially found in the meeting, place an asterisk by the finders initials to indicate that the defect was found during the meeting.
10 Classify the Defect/Open Issue in each of the following categories:
- Major Defect, Minor Defect, or Open Issue;
- Missing, Wrong, or Extra;
- Type of the Defect/Open Issue from the categories listed on the provided Checklist;
- Product in which the Defect/Open Issue originated if other than the product being inspected.

(Note: When the Open Issues are resolved, this block should be updated to reflect the Classification of any Open Issue which was determined to be a Defect.)

11 The initials of the persons required to close an Open Issue are listed in this box. An asterisk is placed beside the name of the person responsible for closure/resolution if that person is not the Author. Specify the date by which a recorded Open Issue must be closed and once it is closed record the resolution of the issue. If more room is needed use an OPEN ISSUES REPORT form. This box is also used to indicate non-routine circumstances, waivers, action item results, Defects which require extra time to correct, etc.
12 Record the page number of this page during the meeting and record the total number of INSPECTION DEFECT LIST pages once the meeting is complete.

During the Rework and Follow-Up stage: For each Defect identified -

13 During the Rework Stage, the Author should indicate the location of all corrections in the product.

14 During the Follow-Up Stage, the Moderator, or the Moderator's designee, should indicate that the Defect was properly "Corrected" by placing a check in the box.

[12] Page ____ of ____ [1] Inspection ID # ______________________

INSPECTION DEFECT LIST (cont'd)

[6] #	[7] Location(s)	[8] Description	[9] Finder's Initials	[10] Classification	[11] Comments	[13] Location of Correction(s) ***	[14] Corrected**
◯				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type [ ] Origin [ ]			☐
◯				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type [ ] Origin [ ]			☐
◯				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type [ ] Origin [ ]			☐
◯				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type [ ] Origin [ ]			☐
◯				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type [ ] Origin [ ]			☐
◯				Major Defect ☐ Missing ☐ Minor Defect ☐ Wrong ☐ Open Issue ☐ Extra ☐ Type [ ] Origin [ ]			☐

(This form is completed by the Recorder, except for: *Moderator and Author
**Moderator only
***Author only)

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INSTRUCTIONS FOR THE INSPECTION DEFECT LIST FORM

1 Unique Inspection ID assigned by the Data Manager during the Planning Stage prior to distributing the Inspection Packages.

After the Inspection Meeting -

2 The Author(s) reports to the Moderator the total time in "X.X" person-hours estimated for Rework.

3 The Author(s) reports to the Moderator the estimated Rework completion date.

4 Date scheduled between the Author(s) and the Moderator for the Follow-Up Meeting to review the corrections made to the product by the Author(s) during the Rework Stage.

After completion of the Rework -

5 Date the Rework is completed by the Author(s). The completion date is revised if the Moderator returns the product to the Author(s) for further Rework.

During the Inspection Meeting. For each Defect/0pen Issue identified -

6 Number of the Defect/Open Issue in sequential order.
7 Location of the Defect/Open Issue in the product.
8 Concise description of the Defect/Open Issue.
9 Initials of the Inspector who raised the Defect/Open Issue in the meeting. If the error was initially found in the meeting, place an asterisk by the finders initials to indicate that the defect was found during the meeting.
10 Classify the Defect/Open Issue in each of the following categories:
- Major Defect, Minor Defect, or Open Issue;
- Missing, Wrong, or Extra;
- Type of the Defect/Open Issue from the categories listed on the provided Checklist;
- Product in which the Defect/Open Issue originated if other than the product being inspected.

(Note: When the Open Issues are resolved, this block should be updated to reflect the Classification of any Open Issue which was determined to be a Defect.)

11 The initials of the persons required to close an Open Issue are listed in this box. An asterisk is placed beside the name of the person responsible for closure/resolution if that person is not the Author. Specify the date by which a recorded Open Issue must be closed and once it is closed record the resolution of the issue. If more room is needed use an OPEN ISSUES REPORT form. This box is also used to indicate non-routine circumstances, waivers, action item results, Defects which require extra time to correct, etc.
12 Record the page number of this page during the meeting and record the total number of INSPECTION DEFECT LIST pages once the meeting is complete.

During the Rework and Follow-Up stage: For each Defect identified -

13 During the Rework Stage, the Author should indicate the location of all corrections in the product.

14 During the Follow-Up Stage, the Moderator, or the Moderator's designee, should indicate that the Defect was properly "Corrected" by placing a check in the box.

[1] Inspection ID # _____

DETAILED INSPECTION REPORT

[2] Data Manager: P. Schuler, MS 125A

[3] **Defects found in Inspected Product:**

Checklist Defect Types	Major			Minor			[4] Total
	Missing	Wrong	Extra	Missing	Wrong	Extra	
Accuracy							
Clarity							
Completeness							
Compliance							
Computation							
Consistency							
Correctness							
Data Usage							
Fault Tolerance							
Feasibility							
Functionality							
Interface							
Level of Detail							
Maintainability							
Modularity							
Performance							
Reliability							
Testability							
Traceability							
Other							
[5] Total Identified							

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(This form is completed by the Moderator.)

INSTRUCTIONS FOR THE DETAILED INSPECTION REPORT FORM

Immediately after the Inspection Meeting -

1 Unique Inspection ID assigned by the Data Manager during the Planning Stage prior to distributing the Inspection Packages.

2 Name and mail stop of the Data Manager responsible for collecting the Formal Inspection statistics.

3 For each Defect on the INSPECTION DEFECT LIST form, place a mark in the proper column according to the classification of the Defect on that form. Each Defect should be classified as Major or Minor; as Missing, Wrong, or Extra; and by Type.

4 Total number of Defects for each Checklist Defect Type.

5 Total number of Defects recorded under each column.

During Follow-Up

The moderator should update this form to reflect each Open Issue which was determined to be a Defect.

[1] Inspection ID # _____

INSPECTION SUMMARY REPORT

[2] Planning Start Date: _____ [5] # Participants: _____ [7] Follow-Up Completion Date: _____

[3] Inspection Meeting Date: _____ [6] Meeting Length: _____ [8] Project Start Date: _____

[4] Approx. Person-Hours Expended (prior to inspection) Developing Work Product: ____ [9] Data Manager: P. Schuler, MS 125A

[10] Total Time Expended in Person-Hours

	Planning	Overview	Preparation	Meeting	Third-Hour	Rework	Follow-Up	Total
Inspectors	X					X		
Author(s)								
Moderator						X		

[11] Number of Representatives from Each Area:

Project Office: _____ Testing: _____
Systems Engineering: _____ Quality Assurance: _____
H/W Development: _____ Operations: _____
S/W Development: _____ Science Team: _____
User/Customer: _____ Other: _____

[12] Defects Found:
Major: ____
Minor: ____

[13] Defects Reworked:
Major: ____
Minor: ____

[14] Open Issues:
Identified: ___
Closed: _____

Closed Found to be Defects: _____ # Closed Found Not to be Defects: _____

[15] Comments: _____

[16] Discrepancy Reports/Change Requests/Waivers: _____

[17] STATUS: ☐ PASS ☐ RE-INSPECTION REQUIRED

Re-inspection Target Date: _____

_____

[18] Moderator's Signature

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(This form is completed by the Moderator and submitted to the Data Manager and, if applicable, the Project QA Representative after Follow-Up has been completed.)

INSTRUCTIONS FOR THE INSPECTION SUMMARY REPORT FORM

1 Unique Inspection ID assigned by the Data Manager during (the Planning Stage prior to distributing the Inspection Packages.

2 Date that the Planning process was initiated.

3 Date of the Inspection Meeting.

4 Approximate time expended in person-hours by the Author(s) in developing the work product, or parts of the work product, under inspection.

Note: If this is a re-inspection, this number should not have changed from the number of hours reported at the first inspection since Rework time is separate from Development time.

5 Total number of participants including the Author(s) and all Inspectors.

6 Length of the Inspection Meeting in "X.X" hours.

7 Date that the Follow-Up Stage was completed.

8 was awarded.

9 Name and mail stop of the Data Manager responsible for collecting the Formal Inspection statistics.

10 Total time expended in "X.X" person-hours by all Inspectors in each stage of the inspection process.

Note: The times for the Author(s) and the Moderator are tracked separate from the other inspection participants.

11 Number of Representatives from each area of expertise. Include the Author's expertise. This may be a fractional number if one Inspector represents multiple areas. However, the total number of representatives must equal the number of inspection participants listed under #5.

12 Total number of Major and Minor Defects found in the product being inspected. These totals should include the number of Open Issues which were determined to be Defects.

13 Total number of Major and Minor Defects corrected during the Rework Stage. **All Major Defects shall be corrected.** A waiver shall be obtained and recorded under #16 for each Major Defect which is not corrected.

14 Total number of Open Issues identified in the product during the Inspection Meeting prior to the Third-Hour and Follow-Up stages.

Total number of Open Issues closed (resolved) after the Inspection Meeting.

Total number of resolved Open Issues that were determined to be Defects.

Total number of resolved Open Issues that were determined not to be Defects.

Note: A waiver should be obtained and recorded under #16 for each Open Issue which has not been addressed.

15 Include any additional comments that may be helpful to the Data Manager.

16 Provide a brief description of any Discrepancy Reports/Change Requests/Waivers generated and their associated Defect/Open Issue number from the INSPECTION DEFECT LIST form. Waivers should be obtained for Major Defects not corrected and for Open Issues which have not been addressed.

17 Check the appropriate box to indicate whether the product is now "Inspection Certified" (Pass) or a re-inspection is required. If a re-inspection is required, indicate a target date for the Re-inspection Meeting.

18 Moderator's signature indicating the completion of the inspection process

B.2 Optional Forms

The forms contained in this section are optional. The purpose and use of the forms is discussed in the following text.

OPEN ISSUE REPORT:
This form is used to record the resolution and the action taken to resolve Open Issues. It is used if the Comments box on the **INSPECTION DEFECT LIST** does not provide enough space for recording the appropriate information. It can also be used to record solutions which were identified during the Third-Hour Meeting.

FORMAL INSPECTIONS LESSONS LEARNED REPORT:
This form is used to provide comments that may be helpful in improving the Formal Inspection process.

MANAGEMENT INSPECTION SUMMARY REPORT:
This form is used to give Managers visibility into Formal Inspection progress and status on a specific project subsystem. It can be a useful part of the project Risk Management Program since it brings to management's attention statistics concerning: the number of Discrepancy Reports/Change Requests/Waivers, the number of Open Issues that have not been closed, and the number of Major Defects that have not been corrected.

TEST REPORT:
This form is used to record and track the correction of Errors discovered during testing or after delivery. The Form also contains valuable statistics that are used for process improvement, causal analysis, evaluating the effectiveness of Formal Inspections, and providing data for estimating testing time on future projects.

FINAL COMPLETION REPORT:
This form provides information on the total time spent developing the product and performing inspections. It also provides information on the percentage of the product which was inspected, data on the total number of Defects which were not corrected before delivery as well as the number of Errors identified after delivery. This form is useful in determining the effectiveness of the Formal Inspections process and the quality of delivered products based on the number of Errors discovered after delivery.

[1] Inspection ID # _____

OPEN ISSUE REPORT
(optional)

[2] Number which was assigned to the Open Issue on the INSPECTION DEFECT LIST form: _____

[3] Issue Raised By: _____

[4] Description: _____

_____

_____

[5] Assigned to: _____* _____

_____ _____

_____ _____

_____ _____

[6] Estimated Closure Date: _____ [7] Actual Closure Date: _____

[8] Third-Hour Meeting

Date: _____

Time: _____

Place: _____

[9] Action Taken / Resolution: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

[10] Total Person-Hours Expended for Resolution:

Inspector's Time:_____ Author's Time:_____ Moderator's Time:_____

*Place the name of the person **responsible** for Closure on this line.

Revision B 4/1992 LaRC (This form is completed by the Recorder and the person responsible for Closure and a copy is returned to the Author and Moderator.)

INSTRUCTIONS FOR THE OPEN ISSUE REPORT FORM

1 Unique Inspection ID assigned by the Data Manager during the Planning Stage prior to distributing the Inspection Packages.

2 Number which was assigned to the Open Issue on the INSPECTION DEFECT LIST form.

3 Name of the Inspector who raised the Open Issue in the Inspection Meeting.

4 Clear description of the Open Issue.

5 Name(s) of the person(s) assigned to resolving the Open Issue. The name of the person responsible for closing the Open Issue should be placed on the first line by the asterisk (*)

6 Estimated date for closure of the Open Issue.

7 Actual date for closure of the Open Issue.

8 Date, time, and place of the Third-Hour Meeting for resolving this Open Issue if a meeting is needed.

9 Brief description of the final resolution of the Open Issue and any actions taken to bring it to closure (such as writing a change request to a higher level document).
Note: If the Open Issue is determined to be a Defect, then the Classification of the Defect should be recorded on the INSPECTION DEFECT LIST form.

10 Total time expended in "X.X" person-hours, by the Inspector(s), Author(s), and Moderator, to resolve the Open Issue.

[1] Inspection ID # _____

FORMAL INSPECTIONS LESSONS LEARNED REPORT (optional)

[2] Submitter: _____ [3] Data Manager: P. Schuler, MS 125A

[4] Area of Expertise:

- ☐ Project Office
- ☐ Systems Engineering
- ☐ H/W Development
- ☐ S/W Development
- ☐ User/Customer
- ☐ Testing
- ☐ Quality Assurance
- ☐ Operations
- ☐ Science Team
- ☐ Other: _____

[5] Inspection Type:

- ☐ SY: System Requirements
- ☐ SU: Subsystem Requirements
- ☐ R0: Functional Design
- ☐ R1: Software Requirements
- ☐ I0: Architectural/Preliminary Design
- ☐ I1: Detailed Design
- ☐ I2: Source Code
- ☐ IT1: Test Plan
- ☐ IT2: Test Procedures and Functions
- ☐ Other: _____

[6] Stage of Inspection:

- ☐ Planning
- ☐ Overview
- ☐ Preparation
- ☐ Inspection Meeting
- ☐ Third-Hour
- ☐ Rework
- ☐ Follow-Up

[7] Comments: _____

Suggested topics to be considered:

- Unique approaches for methods, practices, and standards
- Useful management planning and control techniques
- Major problem areas and how resolution was attained; identification of unresolved problems
- Successful aspects and shortcomings of the inspection process
- Recommendation for future applications

(This form is completed by any Inspector and submitted to the Data Manager.)

INSTRUCTIONS FOR THE FORMAL INSPECTIONS LESSONS LEARNED REPORT FORM

1 Unique Inspection ID assigned by the Data Manager during the Planning Stage prior to distributing the Inspection Packages.

2 Name and phone number of the person submitting the form.

3 Name and mail stop of the Data Manager responsible for collecting the Formal Inspection statistics.

4 Check the appropriate box or record in the space provided your Area of Expertise.

5 If the comments pertain to a particular inspection type, then check the appropriate box or record in the space provided the Inspection Type.

6 If the comments pertain to a particular stage of the inspection process, then check the appropriate box for the Stage of Inspection. Otherwise, leave this section blank.

7 Include all comments that may be helpful in improving the Formal Inspection Process

[15] Page ___1 of ____

MANAGEMENT INSPECTION SUMMARY REPORT (optional)

[1] Project: _____

[2] Subsystem: _____

[3] Data Mgr.: P. Schuler, MS 125A

[4] Inspection ID #	[5] PG/PLOC/ SLOC	[6] Inspection Type	[7] Inspection Status		If Inspection Process Complete							
					[8] # Inspection Meetings	[9] % Defects Fixed			[10] # Person-Hours			[11] Hours Within Current Guidelines?
			Complete	In Progress		Major	Minor	Total	Detect	Fix	Total	

[12] Open Issues:

Identified: ___

Closed: _____ # Closed Found to be Defects: _____ # Closed Found Not to be Defects: _____

[13] Comments: _____

_____

[14] Discrepancy Reports/Change Requests/Waivers: _____

_____

_____

_____

Revision B 4/1992 LaRC

Revision E 11/1989 JPL

(This form is completed by the Moderator.)

INSTRUCTIONS FOR THE MANAGEMENT INSPECTION SUMMARY REPORT FORM

1 Title or acronym of the project for which the report is being produced.

2 Title or acronym of the subsystem for which the report is being produced.

3 Name and mail stop of the Data Manager responsible for collecting the Formal Inspection statistics.

4 Unique Inspection ID assigned to each work product, or portion of work product, which has entered the inspection process.

5 Size of the work product, or portion of work product, given in Pages (PG), Pseudo Lines of Code (PLOC), or Source Lines of Code (SLOC).

6 Inspection Type according to one of the following categories:

SY: System Requirements
SU: Subsystem Requirements
RO: Functional Design
RI: Software Requirements
I0: Architectural/Preliminary Design
I1: Detailed Design
I2: Source Code
FTI: Test Plan
IT2: Test Procedures and Functions
Other

7 Check the appropriate status box to indicate whether the inspection is Complete or In Progress.

8 Total number of Inspection Meetings held for the work product to date. Overview and Third-Hour Meetings are not included in this number.

9 Percent of the Major Defects that were fixed, percent of the Minor Defects that were fixed, and percent of the total number of Defects that were fixed.
Note: If the percent of Major Defects fixed is not 100% then list the waivers that were obtained for those defects not fixed under #14.

10 Total time expended in "X.X' person-hours to detect Defects, to fix Defects, and the total to detect and fix Defects. These numbers should come from the INSPECTION SUMMARY REPORT form Item #10 under the following stages:

Detect - Planning, Overview, Preparation, and Meeting
Fix - Rework, Third-Hour, and Follow-Up
Total - Detect and Fix.

11 Indicate whether the total person-hours to detect and fix is within the guidelines provided in the Estimated Timing Schedule section of the current version of the "Quick Reference Guide"

12 Total number of Open Issues identified in the product during the Inspection Meetings prior to the Third-Hour and Follow-Up stages.
Total number of Open Issues closed (resolved) after the Inspection Meeting.
Total number of resolved Open Issues that were determined to be Defects.
Total number of resolved Open Issues that were determined not to be Defects.
Note: A waiver should have been obtained and should be listed under #14 for each Open Issue which has not been closed (resolved).

13 Include any additional comments that may be helpful to the Manager.

14 Provide a brief description of any Discrepancy Reports/Change Requests/Waivers generated and their associated Defect/Open issue number from die INSPECTION DEFECT LIST form. Waivers should be obtained for Major Defects not Reworked and unresolved Open Issues.

15 Record the page number of this page and the total number of MANAGEMENT INSPECTION SUMMARY pages.

Note: **The Data Manager can generate this form automatically with all items completed, except for #7 In Progress, from the information stored in the data base.**

[15] Page ____ of ____

MANAGEMENT INSPECTION SUMMARY REPORT (cont'd) (optional)

[4] Inspection ID #	[5] PG/PLOC/ SLOC	[6] Inspection Type	[7] Inspection Status		If Inspection Process Complete							
			Complete	In Progress	[8] # Inspection Meetings	[9] % Defects Fixed			[10] # Person-Hours			[11] Hours Within Current Guidelines?
						Major	Minor	Total	Detect	Fix	Total	

Revision B 4/1992 LaRC
Revision E 11/1989 JPL

(This form is completed by the Moderator.)

INSTRUCTIONS FOR THE MANAGEMENT INSPECTION SUMMARY REPORT FORM

4 Title or acronym of the project for which the report is being produced.

5 Title or acronym of the subsystem for which the report is being produced.

6 Name and mail stop of the Data Manager responsible for collecting the Formal Inspection statistics.

4 Unique Inspection ID assigned to each work product, or portion of work product, which has entered the inspection process.

9 Size of the work product, or portion of work product, given in Pages (PG), Pseudo Lines of Code (PLOC), or Source Lines of Code (SLOC).

10 Inspection Type according to one of the following categories:

SY: System Requirements
SU: Subsystem Requirements
RO: Functional Design
RI: Software Requirements
I0: Architectural/Preliminary Design
I1: Detailed Design
I2: Source Code
FTI: Test Plan
IT2: Test Procedures and Functions
Other

11 Check the appropriate status box to indicate whether the inspection is Complete or In Progress.

12 Total number of Inspection Meetings held for the work product to date. Overview and Third-Hour Meetings are not included in this number.

16 Percent of the Major Defects that were fixed, percent of the Minor Defects that were fixed, and percent of the total number of Defects that were fixed.
Note: If the percent of Major Defects fixed is not 100% then list the waivers that were obtained for those defects not fixed under #14.

17 Total time expended in "X.X' person-hours to detect Defects, to fix Defects, and the total to detect and fix Defects. These numbers should come from the INSPECTION SUMMARY REPORT form Item #10 under the following stages:

Detect - Planning, Overview, Preparation, and Meeting
Fix - Rework, Third-Hour, and Follow-Up
Total - Detect and Fix.

18 Indicate whether the total person-hours to detect and fix is within the guidelines provided in the Estimated Timing Schedule section of the current version of the "Quick Reference Guide"

19 Total number of Open Issues identified in the product during the Inspection Meetings prior to the Third-Hour and Follow-Up stages.
Total number of Open Issues closed (resolved) after the Inspection Meeting.
Total number of resolved Open Issues that were determined to be Defects.
Total number of resolved Open Issues that were determined not to be Defects.
Note: A waiver should have been obtained and should be listed under #14 for each Open Issue which has not been closed (resolved).

20 Include any additional comments that may be helpful to the Manager.

21 Provide a brief description of any Discrepancy Reports/Change Requests/Waivers generated and their associated Defect/Open issue number from die INSPECTION DEFECT LIST form. Waivers should be obtained for Major Defects not Reworked and unresolved Open Issues.

22 Record the page number of this page and the total number of MANAGEMENT INSPECTION SUMMARY pages.

Note: **The Data Manager can generate this form automatically with all items completed, except for #7 In Progress, from the information stored in the data base.**

[17] Page ___1 of ____

TEST REPORT
(optional)

[1] Project: _____ [4] Name of Tester: _____ [6] Date: _____

[2] Subsystem: _____ [5] Data Manager: P. Schuler, MS 125A

[3] Unit(s) or Section(s) / Version: _____

[7] Type of Test Phase: ☐ Unit Test ☐ Integration Test ☐ Acceptance Test ☐ Testing After Delivery Due to Problem Report

☐ Other Test: _____

[8] Total Hours Spent Testing: _____ [9] Total Number of Errors Discovered During Testing: _____

[10] #	[11] Date, Brief Description, and Error Type	[12] Discovered By*	[13] Hours to Find / Fix	[14] Origin**	[15] Speculation as to why Error was not found previously
①			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why? _____			
②			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why? _____			
③			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why? _____			
④			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why? _____			

*If error was identified by the Customer/User place a "C" in the box and if it was identified by the Tester place a "T" in the box.

**Specify the Product in which the Error Originated.

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(This form is completed by the Tester, except for :***Author / Developer. This form is returned to the Moderator after the test phase is completed.)

INSTRUCTIONS FOR THE TEST REPORT FORM

1 Title or acronym of the project for which the report is being produced.

2 Title or acronym of the subsystem for which the report is being produced.

3 Name(s) or acronym(s) and version number(s) of the unit(s) or section(s) of a document being tested.

4 Name of the Tester conducting the test.

5 Name and mail stop of the Data Manager responsible for collecting the Formal Inspection statistics.

6 Date that the testing activity began.

7 Check the appropriate box to indicate the type of test being conducted.

8 Total time expended in "X.X" person-hours to conduct the test activity.

9 Total number of Errors which were discovered during the testing activity.

10 Number of the Error in sequential order.

11 Record the date that the Error was discovered, a brief description of the Error and determine the type of Error from the Checklist Defect Types listed on the DETAILED INSPECTION REPORT form.

12 Place a "C" in the box to indicate that the Error was originally discovered by the customer or place a "T" in the box to indicate that the Error was discovered by a Tester.

13 Total time expended in "X.X" person-hours to find the origin of the observed Error and the time to fix the Error.

14 The Tester or Author/Developer should specify the product in which the Error originated (such as the Requirements Document, Design Document, or Code).

15 The Tester or Author/Developer should speculate as to why the Error was not found previously.

16 Check the appropriate box to indicate whether the product was re-inspected after the Error was corrected. If "No", indicate the reason the product was not re-inspected.

17 Record the page number of this page and record the total number of TEST REPORT form pages.

Note: Errors in the testing activities equate to Defects in the inspection activities

[17] Page ____ of ____

TEST REPORT (cont'd) (optional)

[10] #	[11] Date, Brief Description, and Error Type	[12] Discovered By*	[13] Hours to Find / Fix	[14] Origin**	[15] Speculation as to why Error was not found previously
○			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why?			
○			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why?			
○			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why?			
○			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why?			
○			/		
		[16] Re-inspected? *** ☐ Yes ☐ No, why?			

*If error was identified by the Customer/User place a "C" in the box and if it was identified by the Tester place a "T" in the box.

**Specify the Product in which the Error Originated.

(This form is completed by the Tester, except for :***Author / Developer. This form is returned to the Moderator after the test phase is completed.)

INSTRUCTIONS FOR THE TEST REPORT FORM

4 Title or acronym of the project for which the report is being produced.

5 Title or acronym of the subsystem for which the report is being produced.

6 Name(s) or acronym(s) and version number(s) of the unit(s) or section(s) of a document being tested.

6 Name of the Tester conducting the test.

7 Name and mail stop of the Data Manager responsible for collecting the Formal Inspection statistics.

7 Date that the testing activity began.

8 Check the appropriate box to indicate the type of test being conducted.

18 Total time expended in "X.X" person-hours to conduct the test activity.

19 Total number of Errors which were discovered during the testing activity.

20 Number of the Error in sequential order.

21 Record the date that the Error was discovered, a brief description of the Error and determine the type of Error from the Checklist Defect Types listed on the DETAILED INSPECTION REPORT form.

22 Place a "C" in the box to indicate that the Error was originally discovered by the customer or place a "T" in the box to indicate that the Error was discovered by a Tester.

23 Total time expended in "X.X" person-hours to find the origin of the observed Error and the time to fix the Error.

24 The Tester or Author/Developer should specify the product in which the Error originated (such as the Requirements Document, Design Document, or Code).

25 The Tester or Author/Developer should speculate as to why the Error was not found previously.

26 Check the appropriate box to indicate whether the product was re-inspected after the Error was corrected. If "No", indicate the reason the product was not re-inspected.

27 Record the page number of this page and record the total number of TEST REPORT form pages.

Note: Errors in the testing activities equate to Defects in the inspection activities

FINAL COMPLETION REPORT

(optional)

[1] Project: _____ [3] Project Completion Date: _____

[2] Project Start Date: _____ [4] Data Manager: P. Schuler, MS 125A

[5] Product	To be completed by the Project Manager.						To be completed by the Data Manager.							
	[6] Approx. Person-Hours Spent In Development	[7] PG/ PLOC/ SLOC	[8] Errors Discovered After Delivery				[9] Total Person-Hours Spent In Inspections	[10] *	[11] Total Major		[12] Total Minor		[13] Total Open Issues	
			6 Months	1 Year	2 Years	3 Years +		%	Identified	Fixed	Identified	Fixed	Identified	Closed
System Requirements														
Subsystem Requirements														
Functional Design														
Software Requirements														
Architectural Design														
Detailed Design														
Source Code														
Test Plan														
Test Procedures														
Other														
[14] TOTAL														

*Percent of Delivered Work Product Inspected.

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INSTRUCTIONS FOR THE FINAL COMPLETION REPORT FORM

1 Title or acronym of the project for which the report is being produced.

2 Date that the project was initiated. For an in-house project, this would be the date that the Concept Phase began. For a contracted project, this would be the date the contract was awarded. (This date should be the same as the date given on the INSPECTION SUMMARY REPORT form, #8)

3 Date that the project was completed.

4 Name and mail stop of the Data Manager responsible for collecting the Formal Inspection statistics.

The following is completed by the Project Manager for each product -

5 Types of the products developed for the project. If other types of products were developed, list them under "Other".

6 Approximate time expended in person-hours in development of the products including time expended in inspections.

7 Indicate the total number of Pages (PG), Pseudo Lines of Code (PLOC), or Source Lines of Code (SLOC) in the delivered products.

8 Number of Errors discovered 6 months, 1 year, 2 years, and 3 years+ after delivery of the products.

The following is completed by the Data Manager for each product -

9 Total time expended in "X.X" person-hours in inspections.

10 Indicate what percent of the delivered product was inspected.

11 Total number of Major Defects identified and fixed.
Note: If these two numbers are not equal, list the waivers which were written for the Major Defects
which were not corrected on a separate piece of paper and attach it to this form.

12 Total number of Minor Defects identified and fixed.

13 Total number of Open Issues identified and closed (resolved).
(Note: If these two numbers are not equal, list the waivers which were written for the Open Issues which were not closed on a separate piece of paper and attach it to this form.)

14 Total each column.

Appendix C: Checklists

This Appendix contains the Checklists that have been compiled as of the date of this publication. These Checklists can be tailored to the project domain and requirements.

SY - Functional Requirements Checklist

CLARITY

1 Are goals of the system defined?
2 Are requirements specified in an implementation free way so as not to obscure the original requirements?
3 Are implementation and method and technique requirements kept separate from functional requirements?
4 Is the terminology consistent with the user and/or sponsor's terminology?
5 Are the requirements clear and unambiguous? (I.e., are there aspects of the requirements that you do not understand; can they be misinterpreted?)

COMPLETENESS

1. Are requirements stated completely, addressing relevant aspects, yet tolerant of temporary incompleteness? Have all incomplete requirements been captured as TBDs?
2. Has a feasibility analysis been performed and documented?
3. Is the impact of not achieving the requirements documented?
4. Have trade studies been performed and documented?
5. Have the security issues of hardware, software, operations personnel and procedures been addressed?
6. Has the impact of the project on users, other systems, and the environment been assessed?
7. Are the required functions, external interfaces and performance specifications prioritized by need date?

COMPLIANCE

1. Does this document follow the projects system documentation standards? JPL's standards?

CONSISTENCY

1. Are the requirements stated consistently without contradicting themselves or other system's requirements?

FUNCTIONALITY

1. Are all functions clearly and unambiguously described and alphabetized?
2. Are all described functions necessary and sufficient to meet mission/system objectives?
3. Are "don't care" conditions truly "don't care"? Are "don't care" conditions explicitly stated? (Consider portability to identify "don't care" conditions.)

INTERFACES

1. Are all external interfaces clearly defined?
2. Are all internal interfaces clearly defined?
3. Arc! all interfaces necessary, sufficient, and consistent with each other?

MAINTAINABILITY

1. Have the requirements for system maintainability been specified?
2. Are requirements written to be as weakly coupled as possible so that rippling effects from changes is minimized?

PERFORMANCE

1 Are all required performance specifications and margins listed?
(e.g., consider timing, throughput, memory size, accuracy and precision.)
2. For each performance requirement defined:
   a. Do rough estimates indicate that they can be met?
   b. Is the impact of failure defined?

RELIABILITY

1. Are there reliability requirements?
2. Are there error detection, reporting, and recovery requirements?
3. Are undesired events (e.g., single event upset, data loss or scrambling operator error) considered and their required responses specified?
4. Have assumptions about the intended sequence of functions been stated? Are these sequences required?
5. Do these requirements adequately address the survivability of the system from the point of view of hardware, software, operations personnel and procedures?

TESTABILITY

1. Can the system be tested, demonstrated, inspected or analyzed to show that it satisfies requirements.
2. Are requirements stated precisely to facilitate specification of system test success criteria and requirements?

TRACEABILITY

1. Are all functions, structures and constraints traced to mission/system objectives?
2. Is each requirement stated in such a manner that it can be uniquely referenced in subordinate documents?
3. Can all of the requirements be allocated to hardware, software, and operations personnel and procedures.

R0 - Functional Design Checklist

CLARITY

1. Have the hardware and software environments been described? Have all external systems been included?
2. Has the high level architecture been described, illustrated and made consistent with the lower level descriptions?
3. Has the primary purpose for the software been defined?
4. Has the overall functional design been described?

COMPLETENESS

1. Have feasibility analyses been performed and documented (e.g., prototyping, simulations, analogies to current system)?
2. Have all design and implementation goals and constraints been defined?
3. Have the capabilities of each component for each stage or phased delivery been identified?
4. If assumptions have been made due to missing information, have they been documented?
5. Have all TBD requirements from FRD been analyzed?
6. Have trade studies been performed and documented?
7. Have all tradeoffs and decisions been described and justified? Are selection criteria and alternatives included?
8. Has the subsystem been sized (using lines of code or an alternate method)?

COMPLIANCE

I . Does the documentation follow project and/or JPL standards?

CONSISTENCY

1. Arc the requirements in this document consistent with each other?
2. Are the requirements consistent with the FRD, external interfaces, and any other related documents?

CORRECTNESS

1. Does the design seem feasible with respect to cost, schedule, and technology?
2. Have initialization, synchronization, and control requirements been described? Do state diagrams clearly represent the timing?
3. Have assumptions about intended sequences of functions been stated? Are these sequences required?
4. Are the requirements consistent with the actual operating environment (e.g., check hardware timing, precision, event sequencing, data rates, bandwidth)?

DATA USAGE

1. Are data elements named and used consistently?
2. Has all shared data between subsystems been identified?
3. Have the means for shared data management been described? Are the subsystems which set and/or use the shared data indicated?
4. Has the dataflow among hardware, software, personnel, and procedures been described?

FUNCTIONALITY

1. Are all described functions necessary and sufficient to meet the mission/system objectives?
2. Are all inputs to a function necessary and sufficient to perform the required operation?
3. Are all the outputs produced by a function used by another function or transferred across an external interface?
4. Do all functions clearly state how the output is derived from input or shared data?
5. Are all functional states defined?

INTERFACE

1. Are the internal and external interfaces clearly defined?
2. Have all interfaces between systems, hardware, software, personnel, and procedures been functionally described?

3. Have the requirements for data transfer
across each interface been stated?
4. Have the number and complexity of the interfaces been minimized and are they consistent?
5. Are the inputs and outputs for all the interfaces sufficient and necessary?

LEVEL OF DETAIL
1. Are the requirements free of unwarranted design?
2. Does each requirement in the FRD trace to one or more requirements in the FDD?
3. Is there enough detail to proceed to the next phase of the life cycle?
4. Have ail "TBDs" been resolved?

MAINTAINABILITY
1. Have the requirements for software maintainability been specified?
2. Have risk -areas of the design been identified and isolated? Does the design complexity agree with development risk, cost, and schedule?
3. Have all inherited or procured subsystems been documented? Has a cost/benefit analysis been identified?
4. Are reusable parts of other designs being used? Have their effect on design and integration been stated?
5. Are the requirements weakly coupled? Have the number of requirements that are affected when one requirement is changed been minimized?
6. Have analyses been done for cohesion, coupling, traffic statistics, etc?
7. Do the design features enable the system to meet maintainability requirements?

PERFORMANCE
1. Are all performance attributes, assumptions, and constraints clearly defined?
2. Do all explicit and Implicit performance requirements have metrics expressed (e.g., timing, throughput, memory size, accuracy, precision)?
3. For each performance requirement identified (explicit or implicit):
   a. Have the performance estimates been documented?
   b. Do rough estimates indicate that they can be met? Is the impact of failure defined?
   c. Do experiments, prototypes, or analyses verify that the requirements can be met?

RELIABILITY
1. Has an explicit reliability goal been stated?
2. Do the design features enable the system to meet reliability requirements?
3. Are normal operating conditions/errors taken into account? Are special states considered (e.g., cold starts, abnormal termination, recovery)?
4. Have fault tolerance features been identified or analyzed?
5. Have the subsystem level error detection, reporting, and recovery features for internal and external errors been described?

TESTABILITY
1. Can the program sets be tested, demonstrated, analyzed, or inspected to show that they satisfy requirements?
2. Can the subsystem components be developed and tested independently? incrementally?
3. Have any special integration or integration testing constraints been levied?

TRACEABILITY
1. Are the priorities of the requirements documented? Is the impact of not achieving the requirements defined?
2. Are requirement traceability exceptions justified?
3. Have all of the requirements been allocated to hardware, software, personnel, or procedures?
4. Are all functions, structures, and constraints traced to requirements and vice versa?
5. Are requirements stated in a manner so that they can be uniquely referenced in subordinate documents?
6. Are the architectural components for each stage of implementation identified for reference in subordinate documents?

Software Product Assurance

April 1990

R1 - Software Requirements Checklist

CLARITY

1. Are the goals of the subsystem defined?
2. Is the terminology consistent with the users' and/or sponsors' terminology?
3. Are the requirements clear and unambiguous?
4. Is a functional overview of the program set provided?
5. Is an overview of the operational modes, states, and concept described?
6. Have the software environment (co-resident program sets) and hardware environment (specific configurations) been specified?
7. If assumptions that affect implementation have been made, are they stated?
8. Have the requirements been stated in terms of inputs, outputs, and processing for each function?

COMPLETENESS

1. Are required attributes, assumptions, and constraints of the program set completely listed?
2. Have all requirements and constraints been assigned a priority?
3. Have the criteria for assigning requirement priority levels been defined?
4. Have the requirements been stated for each delivery or staged implementation?
5. Have requirements for installation (packaging, site preparation, operator training) been specified?
6. Have the target language, development environment, and run-time environment been chosen?

COMPLIANCE

1. Does the documentation follow project and/or JTIL standards?

CONSISTENCY

1. Are the requirements consistent with each other?
2. Are the requirements here consistent with the requirements in related documents?
3. Are the requirements consistent with the actual operating environment (e.g., check hardware timing, precision, event sequencing, data rates, bandwidth)?
3. Do the requirements stay within the capability of the requirements allocated by the FDD?

DATA USAGE

1. Have the data type, rate, units, accuracy, resolution, limits, range, and critical values for all internal data items been specified?
2. Have the data objects and their component parts been specified?
3. Has the mapping between local views of data and global data been shown?
4. Has the management of stored and shared data been described?
5. Has a list of functions that set and/or use stored and shared data been provided?
6. Are there any special integrity requirements on the stored data?
7. Have the types and frequency of occurrence of operations on stored data (e.g., retrieve, store, modify, delete) been specified?
8. Have the modes of access (e.g., random, sequential) for the shared data been specified?

FUNCTIONALITY

1. Are all described functions necessary and sufficient to meet the mission/system objectives?
2. Are all inputs to a function necessary and sufficient to perform the required operation?
3. Does each function clearly describe how outputs (and shared data) are generated from inputs (and shared data)?
4. Are all function states defined?

INTERFACE

1. Are the inputs and outputs for all the interfaces sufficient and necessary?
2. Are all the outputs produced by a function used by another function or transferred across an external interface?
3. Are the interface requirements between hardware, software, personnel, and procedures included?
4. Have the contents, formats, and constraints of all the displays been described in the SRD or SOM-1?

5. Are all data elements crossing program set boundaries identified?
6. Are all data elements described here or in the SIS1?
9. Has the data flow between internal software functions been represented?

LEVEL OF DETAIL

1. Are the requirements free of design?
2. Have all "TBDs" been resolved?
3. Have the interfaces been described to enough detail for design work to begin?
4. Have the accuracy, precision, range, type, rate, units, frequency, and volume of inputs and outputs been specified for each function?
5. Have the functional requirements been described to enough detail for design work to begin?
6. Have the performance requirements been described to enough detail for design work to begin?

MAINTAINABILITY

1. Are the requirements weakly coupled (i.e., changing a function will not have adverse and unexpected effects throughout the subsystem)?
2. Will the requirements minimize the complexity of the design?
3. Have FRD and FDD maintainability requirements been levied to functions?
4. Have FRD and FDD portability requirements been levied to functions?
5. Has the use of inherited design or code or pre-selected tools been specified?

PERFORMANCE

1. Have the FRD and FDD performance requirements been allocated to each function?
2. Have the resource and performance margin requirements been stated along with tile means for managing them?

RELIABILITY

1. Have quality factors been specified as measurable requirements or prioritized design goals?
2. Have FRD and FDD reliability requirements been levied to functions?
3. Have FRD and FDD availability requirements been levied to functions?
4. Have FRD and FDD security/safety requirements been levied to functions?
5. Are error checking and recovery required?
6. Are undesired events considered and their required responses specified?
7. Are initial or special states considered (e.g., cold starts, abnormal termination)?
8. Have assumptions about intended sequences of functions been stated? Are these sequences required?

TESTABILITY

1. Can the program set be tested, demonstrated, analyzed, or inspected to show that it satisfies the requirements?
2. Are the individual requirements stated so that they are discrete, unambiguous, and testable?
3. Have the overall program set acceptance criteria been established?
4. Have clear pass/fail criteria for the acceptance tests been established?
5. Have the test methods (test, demonstration, analysis, or inspection) been stated for each requirement?

TRACEABILITY

1. Are all functions, structures, and constraints traced to requirements, and vice versa?
2. Have the FDD and ISFD requirements been allocated to functions of the program set?
3. Do the requirements (or traceability matrix) indicate whether they are imposed by the FDD or whether they are derived to support specific FDD requirements?
4. Have the FRD, FDD, and any derived design goals and implementation constraints been specified and prioritized?
5. Is each requirement stated in a manner that it can be uniquely referenced in subordinate documents?

I0-Architecture Design Checklist

CLARITY

1. Is the architecture, including the data flows, control flows, and interfaces, clearly represented?
2. When appropriate, are there multiple, consistent, representations of the design (i.e. static vs. dynamic)?
3. Are all of the assumptions, constraints, decisions, and dependencies for this design documented?
4. Are the goals defined?

COMPLETENESS

1. Have all TBDs been resolved in requirements and specifications?
2. Can the design support suspected changes in these TBDrequirements?
3. Have the impacts of the TBDs been assessed?
4. Has a risk plan been made for the parts of the design which may not be feasible?
5. Have design trade offs been documented? Does the documentation include the definition of the trade space and the criteria for choosing between tradeoffs?
6. Has design modeling been performed and documented?

CQMPLIANCE

1. Does the documentation follow project and/or JPL standards?

CONSISTENCY

1. Are data elements, procedures, and functions named and used consistently throughout the program set and
with external interfaces?
2. Does the design reflect the actual operating environment? Hardware? Software?

CORRECTNESS

1. Is the design feasible from schedule, budget, and technology standpoints?
2. Is there wrong, missing, or incomplete logic?

DATA USAGE

1. Is the conceptual view for all composite data elements, parameters, and objects documented?
2. Is there any data structure needed that has not been defined, or vice versa?
3. Has the management and use of shared and stored data been clearly described?
4. Have the lowest level data elements been described? Have value ranges been specified?

FUNCTIONALITY

1. Do the specifications for each module fully implement the functionality required in the SRD and SIS-1 ?
2. Is the abstract algorithm specified for each sublevel module?
3. Will the selected design or algorithm meet all of its requirements?

INTERFACES

1. Is the operator interface designed with the user in mind (i.e. vocabulary, useful messages)?
2. Are the functional characteristics of the interfaces described?
3. Will the interface facilitate troubleshooting?
4. Are all interfaces consistent with each other, other modules, and requirements in SRD, SIS-1/2?
5. Do all interfaces provide the required types, amounts,and quality of information?
6. Have the number and complexity of interfaces been minimized?

LEVEL OF DETAIL

1. Has the size of each sublevel module been estimated (lines of code)? Is it reasonable?
2. Are all possible states or cases considered?
3. Is the design of sufficient detail to proceed to the detailed design phase?

MAINTAINABILITY

I. Is the design modular?
2. Do the modules have high cohesion and low coupling?

PERFORMANCE

1. Has performance modeling been performed and documented when appropriate?
2. Are the primary performance parameters specified (e.g., real time, memory size, speed requirements, amount of disk I/0)?
3. Do processes have time windows (e.g., flags may be needed to "lock" structures, semaphores, some code may need to be non-interruptible)?
4. Have the critical path(s) of execution been identified and analyzed?

RELIABILITY

1. Does the design provide for error detection and recovery (e.g. input checking)?
2. Are abnormal conditions considered?
3. Are all error conditions specified completelyand accurately?
4. Does the design satisfy all systems integrity commitments for this product?

TESTABILITY

1. Can the program set be tested, demonstrated, analyzed, or inspected to show that it satisfies requirements?
2. Can the program set be integratedand tested in an incremental manner?

TRACEABILITY

1. Are all parts of the design traced back to requirements in SRD, SIS-1, other project documents?
2. Can all design decisions be traced back to trade studies?
3. Has the history of inherited designs beendocumented?
4. Are all known risks from inherited designs identified and analyzed?

11 - Detailed Design Checklist

CLARITY

I. Is the intent of all units or processes documented?
2. Is the unit design, including the data flow, control flow, and interfaces, clearly represented?
3. Has the overall function of the unit been described?

COMPLETENESS

I. Are all variables, pointers, and constants defined and initialized?
2. Have the specifications for all units in the program set been provided?
3. Have all the acceptance criteria been described?
4. Have the algorithms (e.g., in PDL) used to implement this unit been specified?
5. Have all the calls made by this unit been listed?
6. Has the history of inherited designs been documented along with known risks?

COMPLIANCE

1. Does the documentation follow project and/or JPL standards?
2. Has the unit design been created using the required methodology and tools?

CONSISTENCY

1. Are data elements named and used consistently throughout the unit and unit interfaces?
2. Are the designs of all interfaces consistent with each other and with the SIS-2 and SSD-1?
3. Does the detailed design, together with the architectural design, fully describe the "as-built" system?

CORRECTNESS

1. Is there logic missing?
2. Are literals used where a constant data name should be used?
3. Are all conditions handled (greater-than, equal-to, lcss-than-zero, switch/case)?
4. Are branches correctly stated (the logic is not reversed)?

DATA USAGE

1. Are all the declared data blocks actually used?
2. Have all the data structures local to the unit been specified?
3. Are all routines that modify shared data (or files) aware of the access to the shared data (or files) by other routines?
4. Are all logical units, event flags, and synchronization flags defined and initialized?

FUNCTIONALITY

1. Does this design implement the specified algorithm?
2. Will this design fulfill its specified requirement and purposes?

INTERFACE

1. Do argument lists match in number, type, and order?
2. Are all inputs and outputs properly defined and checked?
3. Has the order of passed parameters been clearly described?
4. Has the mechanism for passing parameters been identified?
5. Are constants and variables passed across an interface treated as such in the unit's design (e.g. a constant should not be altered within a subroutine)?
6. Have all the parameters and control flags passed to and returned by the unit been described?
7. Have the parameters been specified in terms of unit of measure, range of values, accuracy, and precision?
8. Is the shared data areas mapped consistently by all routines that access them?

LEVEL OF DETAIL

1. Is the expansion ratio of code to design documentation less than 10:1?
2. Are all required module attributes defined?
3. Has sufficient detail been included to develop and maintain the code?

MAINTAINABILITY

I. Does this unit have high internal cohesion and low external coupling (i.e., changes to this unit do not have any unforeseen effects within the unit and have minimal effect on other units)?
2. Has the complexity of this design been minimized?
3. Does the header meet project standards (e.g., purpose, author, environment, nonstandard features used, development history, input and output parameters, files used, data structures used, units invoking this one, units invoked by this one, and explanatory notes)?
4. Does the unit exhibit clarity, readability, and modifiability to meet maintenance requirements?

PERFORMANCE

1. Do processes have time windows?
2. Have all the constraints, such as processing time and size, for this unit been specified?

RELIABILITY

1. Are default values used for initialization and are they correct?
2. Arc boundary checks performed on memory accesses (i.e., arrays, data structures, pointers, etc.) to insure that only the intended memory locations are being altered?,
3. Is error checking on inputs, outputs, interfaces, and results performed?
4. Are meaningful messages issued for all error conditions?
5. Do return codes for particular situations match theglobal definition of the return code as documented?
6. Are undesired events considered?

TESTABILITY

1. Can each unit be tested, demonstrated, analyzed, or inspected to show that they satisfy requirements?
2. Does the design contain checkpoints to aid intesting (e.g., conditionally compiled code, data assertion tests)?
3. Can all logic be tested?
4. Have test drivers, test data sets, and test results for this unit been described?

TRACEABILITY

1. Are all parts of the design traced back to the requirements?
2. Can all design decisions be traced back to trade studies?
3. Have all the detailed requirements for each unit been specified?
4. Have the unit requirements been traced to the SSD-1? Have the SSD-1 specifications been traced to the unit requirements?
5. Has a reference to the code or the code itself been included?

IT1 - TEST PLAN CHECKLIST

COMPLETENESS

1. Does the Test Plan specify the overall approach and policy for acceptance test?
2. Does the Test Plan clearly specify the order of the steps of all integration testing?
3. Does the Test Plan include a description of the type of hardware and software system environment to be used?
4. Does the Test Plan define success criteria for all tests?
5. Does the Test Plan adequately describe the functions being tested?
6. Does the Test Plan explicitly describe those functions that will not be tested during integration test?
7. Does the Test Plan describe conditions under which testing will be balled and resumed during integration test?
8. Does the test case set adequately exercise all significant code changes, particularly interface modifications?
9. Does the Test Plan adequately describe integration test baselines?
10. For a phased delivery, does the Test Plan establish test baselines in each phase for use in the next phase?
11. Does the Test Plan define sufficient and proper regression testing?

COMPLIANCE

1. Does the Test Plan list all the specifications, standards, and documents necessary for its development?

CONSISTENCY

1. Has the order of integration tests been defined to match the order of integration specified in higher level documents?
2. Is the Test Plan consistent with higher level test plan documents?

CORRECTNESS

1. Are the Test Plan entrance and exit criteria realistic?
2. Are all necessary drivers and stubs identified and available to test the function as specified?
3. Are all dependencies between the input simulator and the hardware addressed?

LEVEL OF DETAIL

1. Is the coverage of the test case set sufficiently complete to provide confidence that the functions being tested operate correctly within their intended environment?
2. Does the test case set include adequate coverage of illegal and conflicting input combinations?
3. Does the test case set include adequate usage of default input values?
4. Does the test case set exercise an adequate number of program error paths?

MAINTAINABILITY

1. Are control and incorporation of changes to the specifications, design, or coding that may occur during test contained in the Test Plan?

RELIABILITY

1. Is sufficient test data collected and documented to support estimation of the software's reliability?

TESTABILITY

1. Is the testing approach feasible?

2. Are all those requirements considereduntestable and unable to be tested identified, and is it explained why they are untestable or unable to be tested?
3. Has development and procurement of test facilities (input simulators and output analyzers), methods, and tools been scheduled with adequate lead time?
4. Are the testing schedules described to a sufficient level of detail (testing schedules are described for each individual function to be tested)?
5. Is the method of estimating resource usage required for testing identified?
6, For multiple builds, have all requirements been identified on a per-build basis?
7. Have the roles and responsibilities for all personnel involved in the test activity been identified?
8. Is the specification of test facilities consistent with the test success criteria?
9. Are there any scheduling conflicts among the testing personnel schedules?
10. Does the Test Plan call for the participation of independent quality assurance personnel to verify test activity?
11. Does the Test Plan call for independent testing?

TRACEABILITY

1. Do the acceptance tests exercise each requirement specified in higher level documents (FRD, FDD, SRD)?
2. Are the test acceptance criteria traceable to higher level requirements documents (SIS, UG/SOM, FRD, SRD, FDD)?
3. Does the test case set for integration test exercise each interface described in higher level documents (SIS and SSD)?

IT2 - TEST PROCEDURE & FUNCTION CHECKLIST

CLARITY

1. Are the operator instructions explicit and clear for case of execution of the test procedure?
2. Are the operator instructions presented step-by-step and in the order in which they must be performed?
3. Are the steps of the set-up and test procedures precise, unambiguous, and listed as individual items?
4. Are there "progress" messages that will notify the operator when significant parts of the test are being executed?
5. Are the criteria for success and failure clear and unambiguous?

COMPLETENESS

1. Is the function being tested accurately described?
2. Is the function being tested the latest revision?
3. Is the description of the purpose of this test procedure complete and accurate?
4. Is each requirement associated with this function exercised by this test procedure?
5. Is the expected response to each step of the test procedure described with the operator instructions for that step?
6. Are there criteria for test success and failure?
7. Does the test procedure list the precedence of tests?
S. Does the test procedure indicate the significance of proper evaluation of test results?
9. Are all normal and abnormal completion messages identified?
10. Does the procedure state whether or not it is possible to continue in the event of a program stop or indicated error? If so, does it indicate the method for restarting or other recovery action?
11. Are an adequate number of control paths in the tested function exercised?
12. Do the test procedures lead to the determination of success or failure?
13. Are an adequate number of logical condition expressions in the tested function exercised?
14. Do the test cases demonstrate the program's response to illegal and conflicting input data?

CONSISTENCY

1. Are all dependencies of the test procedure identified?

CORRECTNESS

1. Do the observed results of performing the procedure agree with the expected program behavior?
2. Are the interfaces between the code being tested and the test equipment and software correct?
3. Are the formats of the input data correct?

PERFORMANCE

1. If a performance criterion is associated with any step of the test procedure, is that criterion explicitly stated along with the operator instructions for that step?

RELIABILITY

1. Has the test equipment been validated and calibrated?
2. Has the test software been validated?
3. Have all input data been verified?
4. Is sufficient test data collected and documented to support estimation *of* the software's reliability?

TESTABILITY

1. Does the test procedure identify all of the equipment, software, and personnel required for testing?
2. Can the test procedure be performed with minimal support from the development team?
3. Is the test procedure consistent with the capabilities of the test facilities?
4. Is the testing schedule described to a sufficient level of detail?
5. Does the Test Plan call for the participation of independent quality assurance personnel to vary testing activity?
6. Does the Test Plan call for independent testing?

TRACEABILITY

1. Does the test procedure list all specifications, procedures, handbooks, or manuals required for operation?
2. Is the traceability shown between the requirements and the acceptance test combinations?
3. Are the criteria for success traced to requirements?
5. Is the creator of each test case dataset identified?

I2 – ADA Inspection Checklist

This checklist is intended for use in the inspections at the conclusion of code and unit testing. Both the CSU and the results of its regression testing are evaluated in these inspections.

Entrance Criteria

Successful completion of CSU unit testing as per SDH entry 5 -6.

Inspection Material

The following items will be required material for an I2 level Ada source code inspection:

- Compilation listing with line and page numbers and portability summary.
-
- Reports from the Adamat quality assurance tool as per SDH entry 7- 6.
-
- Regression test result report as specified In SDH entry 5 -6.

General

1.0 Does the code implement the intent of the detailed design as documented in the SDD and any applicable RFAs?

2.0 Does the implementation of the CSU adhere to the standards and methodologies specified in the SDH?

3.0 Is the size of the CSU within limits specified in SDH entry 3-7?

4.0 Does the code contradict the information contained in any supporting documentation such as the textual part of the SDD or the package/entity diagrams?

5.0 Is the code accompanied by explanatory comments?

Checklist for compliance to Ada coding standard

These checklist items have been derived from the NASA Ada Style Guide no SEL-87-002 (ASG). Desirable and undesirable features are marked (Good) and (Avoid) respectively Where appropriate, examples and explanations have been provided to aid clarity.

Notes for the reviewer:

I. The ASC contains both standards (mandatory) and recommendations or guidelines. This checklist was derived from the standards only.

II. The checklist items related to prologue and naming conventions are governed by the SDH entries 3-6 and 3-5.

III. Some of the ASG standards are inapplicable. These are shown as struck text. When an ASC standard has been changed or modified, the original appears as struck text.

IV. Checklist items related to exception handling is governed primarily by the SDH entry 3-17.

DECLARATON AND TYPES

1.0 Are all objects which do not change declared as constants? (Good)

2.0 Does the code use numeric literals or expressions in place of constant objects? (Avoid)

3 0 Are the constant objects declared without a type? (Avoid)
Universal constants should be used only for truly type less entities e.g. pi or number of things.

4.0 Are separate types being used for values that belong to logically independent sets? (Good)

5.0 Is an integer type used where an enumerated type is more appropriate? (Avoid)

6.0 Are the rangeand accuracy of floating point types specified? (Good)

7 0 Are array types being used where record types would be more appropriate? (Avoid)

8 0 Is any array object declared with an anonymous type, i.e.declared without a type identifier? (Avoid)

```
Good:    type RADAR_SITESis array(l .. 28) of PLACES;
         Radar_Site  :  RADAR_SITES;
Bad:     Radar_Site  :  array(I .. 28) of PLACES;
```

9.0 Are type and object declarations accompanied with explanatory comments? (Good)

10 0 Does the program text use a consistent and clear indentation scheme? (Good)

EXCEPTIONS

1.0 Are exceptions being used normal processing such as returning normal status information or as devices for normal flow control? (Avoid)

2.0 Do the exception handlers conform to the logging guidelines given in SDH entry 3-17? (Good)

3.0 Do the task bodies provide a handler for each predefined exception (in the STANDARD package)? (Good)

4.0 Is there a “when others” handler in the outer most frame of each task body and main program? Also, is the use of the "when others" handler consistent with the guidelines given in SDH entry 3-17)? (Good)

5.0 Is there provision for handling I/0 exceptions in the procedures that perform 1/07 (Good)

6.0 Do the units interfacing with non-Ada environments transform error-status information into user defined exceptions (Good)

7.0 Does each cask handle the exceptions raised within it? (Good)

8.0 Is any exception propagated outside its static scope? (Avoid)

9.0 Are any checks suppressed using PRAGMA SUPPRESS? (Avoid)

GENERIC UNITS

1.0 Does the use of generic units conform to the guidelines given in SDH entry 3-14? (Good)

2.0 Are the actual subprograms provided during instantiation conceptually consistent with the corresponding generic formal parameters? (eg. are their actions similar?) (Good)

3.0 Does the prologue associated with the generic units conform to the guidelines given in the SDH entry 3-5? (Good)

INPUT-OUTPUT

1.0 Are "end-of -line" or "end-of-page" characters being used for line or page formatting? (Avoid)
- use of New_Line and New_Page is preferable

2.0 Is there any unnecessary use of Low_Level_I0? (Avoid)

LEXICAL ELEMENTS_

1.0 Does the code redefine the meaning of any identifier in the package STANDARD? (Avoid)

2.0 Does the code deviate from the following lexical conventions? (Avoid)
- Reserved identifiers in lower case
- Type identifiers in upper case
- Identifiers are meaningful
- Indentation and layout of program text is consistent

NAMES AND EXPRESSIONS

1.0 Are arrays and records initialized using assignments to individual components rather than with aggregates? (avoid)

2.0 Are explicit type conversions used where a type qualified expression is meant? (Avoid)
Good: INTENSITY_TYPE(2.55)
Bad : INTENSITY_TYPE(2.55)

3.0 Is type qualification being used in avoidable situations? (avoid)

4.0 Are type names common nouns such as DEVICE_TYPE, AUTHORITY_LEVEL_TYPE, USER_NAME_TYPE? (Good)

5 0 Are the names of non-Boolean objects nouns such as:
```
Current_User  :  USER_NAME;
Line_Printer  :  DEVICE;   (Good)
```

6 0 Are the names of the Boolean valued objects predicate clauses such as:
```
User_Is_Available  :  BOOLEAN;
List_Empty         :  BOOLEAN;  (Good)
```

PACKAGES

1.0 Does each package fulfil one or more of the following: (Good)
- Model an abstract entity appropriate to the problem domain.
- collect a cohesive set of types and objects.
- group together program units for configuration control or visibility reasons.

2.0 Are all non-trivial nested package bodies declared as subunits? (Good)

3.0 Does the private part of any package specification contain extraneous information? (Avoid)
- The private part should contain nothing other than the information needed for full definition of the private types and deferred constants

4.0 Is the package name a meaningful noun phrase e.g. Vehicle_Controller, Utility_Package, Parser_Types (Good)

5.0 Do the package names have the prefix and suffix as specified in SDH entry 3-6? (Good)

6.0 Does the package specification prologue text conform to the SDH entry 3-5? (Good)

7.0 Do the package body and body stub prologue texts conform to the SDH entry 3-5? (Good)

PROGRAM STRUCTURE AND COMPILATION

1.0 Are all non-trivial nested units made into separate subunits? (Good)

2.0 Does any unit import another unit it does not need to see? (Avoid)
- Units needed by the body should be imported by the body, not the specification.
- Units needed by a subunit should be imported by the subunit, not its parent.

3.0 Is each compilation unit in a separate file? (Good)

4.0 Was the unit compiled with the current versions of the project standard library units? (e.g. standard type packages?) (Good)

STATEMENTS

1.0 Are loops rather than array slice assignments being used, to copy all or part of an array? (Avoid)

2.0 Are "if" and "case" statements being used improperly? (Avoid)
- “case" statements should be used in all selections controlled by an enumerated type ocher than a BOOLEAN, when the "if" statement should be used.

3.0 Are blocks being used in place of procedures? (Avoid)

4 0 Are there any '!go to" statements? (Avoid)

5 0 Are the related sequences of statements collected together into groups by blocking them with blank lines? (Good)

6 0 Do the "if", "case", "loop" and block statements follow a consistent and meaningful indentation scheme? (Good)

7 0 Is the code well documented? Do the comments accurately reflect the logic of the statements?

SUBPROGRAMS

1.0 Does each subprogram perform a single, conceptual action at its level of abstraction? (i.e., are subprograms functionally cohesive)? (Good)

2.0 Are overloaded functions being used in cases other than the following? (Avoid)
- widely used utility subprograms performing similar actions on different types of arguments
- overloading of operators

3.0 Are procedure names imperative verbs eg. Obtain_Next_Token, Increment_Line_Counter (Good)

4.0 Are the names of BOOLEAN valued functions predicate clauses eg. Stack_Is_Empty, Last_Item, Device_Not_Ready (Good)
Non-BOOLEAN function names may be noun phrases eg. Top_Of_Stack, Sensor_Reading, X_Component (Good)

5.0 Does the subprogram specification prologue text conform to the SDH

entry 3-5? (Good)

6 0 Are parameter modes missing from procedure specifications? (Avoid)

7 0 Do the subprogram body and body stub prologue texts conform to the SDH entry 3-5? (Good)

TASKS

1.0 Are task types being used where a directly named task would be more appropriate? (Avoid)

2.0 Is there unnecessary use of dynamically created tasks? (Avoid)

3.0 Is there a proper termination mechanism for each task? (Good)

- Tasks nested within the main program should terminate by reaching its "end" or have a selective wait with a terminate alternative.
- Tasks nested within library packages (or dependent upon any library package) SHOULD NOT USE the "terminate" alternative, as these tasks will not terminate due to a terminate alternative (LRM). Some other provision is necessary for proper termination of these tasks.

4.0 Does the body of the accept statement contain any actions not essential for the rendezvous? (Avoid)

5.0 Does the task directly or indirectly call its own entry? (Avoid)

6.0 Does any task use a "busy wait" loop in place of a delay statement? (Avoid)

7.0 Does the code rely upon the execution pattern of tasks (e.g. known time pattern, fixed, etc.) for synchronization? (Avoid)

8.0 Are there any concurrently executing tasks that share a common variable? (avoid)

9.0 Is each variable that is shared by tasks identified by documentary comments at its point of declaration? (Good)
Conversely, does each task clearly identify and document the list of variables it shares with other tasks? (Good)
Note: this does nor apply to parameters exchanged during

rendezvous

10.0 Is each task name a noun phrase describing the function of the task, eg. Sensor_Interface, Status_Monitor (Good)

11.0 Does the task specification prologue text conform to the SDH entry 3-5? (Good)

12.0 Do the task body and body stub prologue texts conform to the SDH entry 3-5? (Good)

13.0 Is each accept statements accompanied an by the RWP project standard documentary comment? (Good)

14.0 Is the mode of any rendezvous parameter missing from the accept statement? (Avoid)

REPRESENTATION CLAUSES AND IMPLEMENTATION DEPENDENT FEATURES

1.0 Are the representation clauses and implementation features where necessary, hidden inside the package bodies? (Good)

2.0 Is there documentation to identify and document the use of machine dependent or low-level features? (Good)

3.0 Are representation clauses or implementation dependent features being used except for the following purposes? (Avoid)
- increase efficiency to meet requirement
- interfacing hardware, foreign code or foreign data
- interrupt handling
- specify task storage size

4.0 Are representation clauses placed away from the objects they affect? (Avoid)

VISIBILITY

1.0 Does the scope of any identifier (local or imported from another unit) extend further than necessary? (Avoid)

2.0 Is the "use" clause being used in cases other than the following? (Avoid)
- for packages of commonly used utilities
- importing packages with overloaded operators

- predefined I/0 packages eg. Text_Io, and instantiations of its components
- to make imported enumerated rated constants directly visible without the use of the dot notation

3.0 In cases when a package is directly visible (use clause) are unqualified names being used for referring to any imported entity other than those listed in 2 above. (Avoid)

The following apply to the CSU regression testing.

1.0 Does the regression test baseline include tests for all major areas of concern such as: critical performance requirements, code - or data. structures requiring high accuracy, critical error handling, areas of high technical risk, major areas of control and/or decision points, etc.?

2.0 Are the test data used in the regression tests representative of the normal, error and stressed running conditions?

3.0 Are the regression test results comparable to those expected? Are the discrepancies, if any, between the obtained and expected results documented and justified?

I2 - Code Inspection Checklist
"C"

FUNCTIONALITY
1. Does each unit have a single function?
2. Is there code which should be in a separate function?
3. Is the code consistent with performance requirements?
4. Does the code match the Detailed Design?

DATA USAGE
A. Data and Variables
1. Are declarations grouped into externals and internals?
2. Do all but the most obvious declarations have comments?
3. Is each name used for only a single function?

B. Constant
1. Are all constant names upper case?
2. Are constants defined via "# define"?
3. Are constants that are used in multiple files defined in an INCLUDE header file?

C. Pointers Typing
1. Are pointers declared and used as pointers (not integers)?
2. Are pointers initialized?

LINKAGE
1. Are "INCLUDE" files used according to project standards?
2. Are nested "INCLUDE" files avoided?
3. Is all data local in scope (internal static or external static) unless global linkage is specifically necessary and commented
4. Are the names of macros all upper case?

LOGIC
A. Lexical Rules for Operators
1. Are unary operators adjacent to their operands?
2. Are primary operators "->"."()" adjacent to there operands?
3. Do assignment and conditional operators always have space around them.
4. Are commas and semicolons followed by a space?
5. Are keywords followed by a blank?
6. Is the use of "(" following function name adjacent to the identifier?
7. Are spaces used to show precedence? If precedence is at all complicated, are parens used (esp. with bitwise ops)?

B. Evaluation Order
1. Are parentheses used properly for precedence?
2. Does the code depend on evaluation order, except in the following cases?
   a. exprl, expr2
   b. exprl ? expr2 : exp2
   c. exprl && expr2
   d. expr1 || expr2
3. Are shifts used properly?
4. Does the code depend on order of effects? (e.g. i = i++;)

C. CONTROL

1. Are "else_if" and "switch" used clearly? (generally "else_if" is clearer,but -switch" maybe used for not-mutually-exclusive cases, and may also be faster).
2. Are "goto" and "labels" used only when absolutely necessary, and always with well-commented code?

MAINTENANCE

1. *Are non-standard usages isolated in subroutines and well documented?
2. Does each unit have one exit point?
3. Is the unit easy to change?..
4. Is the unit independent of specific devices where possible?
5. Is the system standard defined types header used if possible (otherwise use project standard header, by "include")?

CLARITY

A. Comments

1. Is the unit header informative and complete?
2. Are there sufficient comments to understand the code?
3. Are the comments in the units informative?
4. Are comment lines used to group logically-related statements?
5. Are the functions of arrays and variables described?
6. Are changes made to a unit after its release noted in the development history section of the header?

B. Layout

1. Is the layout of the code such that the logic is apparent?
2. Are loops indented and visually separated from the surrounding code?

C. Lexical Control Structures

1. Is a standard project-wide (or at least consistent) lexical control structure pattern used?

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FORTRAN

FUNCTIONALITY

1. Do the units meet the design requirements?
2. Does each unit have a single purpose?
3. Does the code match the Detailed Design specifications?

DATA USAGE

A. General

1. Are all variables defined, initialized, and used?
2. Are there typos, particularly "O" for zero, and "I" for one?
3. Are there misspelled names which are compiled as function or subroutine references?
4. Are declarations in the correct sequence? (DIMENSION, EQUIVALANCE, DATA).

B. Common/Equivalence

1. Are there local variables which are in fact misspellings of a COMMON element?
2. Are the elements in the COMMON in the right sequence?
3. Do EQUIVALENCE statements force any unintended shared data storage?
4. Is each EQUIVALENCE commented?

C. Arrays

1. Are all arrays DIMENSIONed?
2. Are array subscript references in column, row order? (Check all indices in multi-dimensioned arrays.)
3. Are array subscript references within the bounds of the array?
4. Are array subscript references checked in critical cases?
5. Is each array used for only one purpose?

D. Variables

1. Are the variables initialized in DATA statements, BLOCK DATA, or previously defined by assignments or COMMON usage?
2. Should variables initialized in DATA statements actually be initialized by an assignment statement; that is, should the variable be initialized each time the unit is invoked?
3. Are variables used for only one purpose?
4. Are variables used for logical unit assignments?
5. Are the correct types (REAL, INTEGER, LOGICAL, COMPLEX) used?

E. Input and Output

1. Do FORMATs correspond with the READ and WRITE lists?
2. Is the intended conversion of data specified in the FORMAT?
3. Are there redundant or unused FORMAT statements?
4. Should this unit be doing any I/O? Should it be using a message facility?
5. Are messages understandable?

F. Data

1. Are all logical unit numbers and flags assigned correctly?
2. Are constant values constant?

LINKAGE

1. Are the parameters of the calling program and routine of the correct type, order, and number?
2. Is an array passed to a subroutine only when an array is defined in the subroutine?
3. Does the subroutine return an error status output parameter?
4. If array dimensions are passed (dynamic dimensioning) are they greater than 0?
5. Does a subroutine modify any input parameter? If so, is this fact clearly stated?
6. Do subroutines end with a RETURN statement and not a STOP or a CALL EXIT?
7. Does a FUNCTION routine have only one output value?

LOGIC

A. Loops

1. Are the loop parameters expressed as variables?
2. Is the loop index within the range of any array it is subscripting?
3. Is the index variable only used within the DO loop?
4. Does the loop handle all the conditions required?
5. Is loop nesting in the correct order?

B. Branches

1. Are branches handled correctly?
2. Are branches commented?
3. When using computed GO TOs, is the fall-through case tested, checked, and handled correctly?
4. Are floating point comparisons done with tolerances and never made to an exact value?

C. Lexical Rules

1. Are parentheses used correctly?
2. Is the use of mixed-mode expressions avoided?
3. Do integer comparisons account for truncation?
4. Are complex numbers used correctly?
5. Is the precision length selected adequate?

MAINTENANCE

1. Are library routines used?
2. Is non-standard FORTRAN isolated in subroutines and well documented?
3. Is the use of EQUIVALENCE limited so that it does not impede understanding the unit?
4. Is the use of GO TOs limited so that it does not impede understanding the unit?
5. Is there no self-modifying code? (No ASSIGN statements, or PARAMETER statements.)
6. Is the unit independent of specific devices where possible?
6. Are type declarations implicit rather than explicit when possible?

CLARITY

1. Is the unit header informative and complete?
2. Are there sufficient informative comments to understand the code?
3. Are comment lines used to group logically-related statements?
5. Are the functions of arrays and variables described?

Appendix D: Certification of Inspection Participants

D.1 Moderator Certification

To obtain Moderator Certification, complete the following activities:

1. Complete the NASA course entitled "Formal Inspections for Software Development".
2. Acting in the role of Moderator, conduct a minimum of three inspections while observed by a Certified Moderator or Certified Instructor designated by the Chief Moderator.

D.2 Inspector Certification

To obtain Inspector Certification to fulfill the role of Reader, Recorder, Author or Inspector, complete the following activities:

1) Complete the NASA course entitled "Formal Inspections for Software Development".

Note: Langley personnel may complete the course created at LaRC (which is a condensed version of the NASA course) and participate in an actual inspection as an Inspector. The course provides an overview of the process and the basic knowledge the students need to participate as an Inspector. This class is generally used to train those Inspectors that are affiliated with the project but are not participating in the actual software development process. The class is usually attended by members of the Science Team, users of the final product, domain specialists, and representatives from other subsystems that are not software intensive, like thermal or optical, but which have a vested interest in the functionality of the software. However, it is strongly recommended that all Inspectors attend the longer NASA class, since its workshop provides an opportunity for students to participate in an inspection with an instructor present to answer questions concerning the process. In addition, this class covers the material in greater detail than the condensed class, and gives the student a better understanding of the rationale behind the steps of the process.

D-3 Librarian Certification

No certification is required to fulfill the role of Librarian.

Appendix E: Inspection Type and Participants

This appendix gives suggestions on the possible areas of expertise from which inspection participants could be chosen for each different type of inspection. The actual participants are chosen based on specific project needs, criticality, budget and schedule. Note that participants with more than one area of expertise can be chosen to decrease the size of the Inspection Team.

Inspection Type	Participants
SY - System Requirements	System Requirements Analyst/System Engineer (Author) Peer System Requirements Analyst The Engineer responsible for each subsystem requirements (Examples: Software, Optical, Thermal, Electronics) System Test Engineer User(s) Quality Assurance
SU - Subsystem Requirements	Software Requirements Analyst (Author) Peer Software Requirements Analyst System Requirements Author Developer responsible for Architectural Design An Engineer from each subsystem the software mustinterface with (Examples: Optical, Thermal, Electronics) Test Engineer Lead Software Subsystem Engineers Software Engineer responsible for software interfacing Algorithm Developer Performance Representative Operations Engineer Author of User's Guide or Software Operator's Manual User(s) Quality Assurance

Inspection Type	Participants
I0 - Architectural Design	Architectural Designer (Author) Peer Architectural Designer Subsystem Requirements Author Developer responsible for detailed design Test Engineer Algorithm Developer Performance Representative Operations Engineer Author of User's Guide or Software Operator's Manual An Engineer from each subsystem the software must interface with (Examples: Optical, Thermal, Electronics) User(s) Software Maintenance Engineer Quality Assurance
Il - Detailed Design	Detailed Designer (Author) Peer Detailed Designer Architectural Design Author Software Development Engineer Test Engineer Algorithm Developer An Engineer from each subsystem the software must interface with (Examples: Optical, Thermal, Electronics) Software Maintenance Engineer User(s) Quality Assurance
I2 - Source Code	Software Development Engineer (Author) Peer Software Development Engineer Detailed Designer Author Test Engineer Software Maintenance Engineer Requirements or Architectural Design Author Quality Assurance
IT 1 - Test Plan	Test Engineer (Author) Peer Test Engineer Architectural Design Author User of the function(s) within the project Quality Assurance

Inspection Type	Participants
IT2 - Test Procedures cases	Test Engineer (Author of the test cases being inspected) Individual experienced in running functional verification test cases Individual experienced in coding user-oriented functional test Quality Assurance
Other - User's Guide	User's Guide Developer (Author) Peer User's Guide Developer Software Test Engineer Systems Engineer User(s) Quality Assurance

Appendix F: Guidelines for Combining Roles

If a limited staff is available to perform the inspections, some of the Inspectors' roles can be overlapped. The role of Reader and Recorder can be fulfilled by the same Inspector since the Reader cannot continue reading/paraphrasing the work product once a Defect is located and that Defect has been recorded. However, it is preferable to have the Author overlap as the Recorder rather than the Reader. This gives the Reader time to regain the flow of logic while the Defect is being recorded. If the Author takes on the additional role of Recorder, the Author must either read the Defects aloud at the time they are recorded or use a transparency and overhead projector to record the Defects so that all the inspection participants can view the recording of the Defects. Lastly, the Moderator could fulfill the role of Recorder. However, the Moderator may not be able to retain adequate control of the meeting and record the Defects at the same time. Controlling the meeting is one of the main responsibilities of the Moderator.